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ARCHIVES

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OTOLOGY

EDITED IN ENGLISH AND GERMAN

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ARCHIVES OF OTOTOLOGY.

ON THE COMBINED OCCURRENCE OF RACHITIC ALTERATIONS AND DISTURBANCES OF DEVELOPMENT IN THE EARS OF A CRÉTIN.

BY PROF. S. MOOS AND DR. H. STEINBRÜGGE, OF
HEIDELBERG.

(With one wood-cut.)

Translated by JAMES A. SPALDING, M.D., Portland, Me.

A MAN who had been picked up in a miserable and sickly condition in the streets of Heidelberg, died in the jail a few days later, April 3, 1881. He was of middle age, short, and stoutly built, and looked like a crétin. He is also reported to have been a deaf-mute.

The *post-mortem* examination at Dr. J. Arnold's pathological institute revealed the following condition:

Rigor mortis well marked. The skin is covered with numerous excoriations and scabs. The posterior surface of the right shoulder is swollen as big as one's fist. The overlying skin is also reddened, and fluctuates distinctly to the touch. Beneath this swelling lies a large pus cavity, at the bottom of which the muscles are infiltrated with pus. The scapula has undergone extensive carious destruction.

The condition of the organs of the chest and abdomen is omitted as unnecessary to our purpose.

The calvarium is thick, firm, and hyperostotic. The longitudinal sinus is filled with fluid blood, and the pia mater over the great hemispheres swollen and deeply infiltrated with serum. The cerebral convolutions are flattened. The lateral ventricle is considerably enlarged, and filled with a clear fluid. The ependyma is very granular; the substance of the brain, coarse and moist.

Anatomical diagnosis: caries of right scapula, purulent infiltration of the soft parts. Bronchial ectasia, emphysema of the lungs, chronic leptomeningitis, and hydrocephalus internus. Hyperostosis of the cranium.

MACROSCOPIC EXAMINATION OF THE PETROUS BONES.

The squamous portion adjoining the petrous bone is sclerosed and thickened, measuring at several places 1 cm. Both mastoid processes are sclerosed, both petroso-squamous sutures well marked despite the hyperostosis.

Right Petrous Bone.

The ext. aud. meatus and *Mt* are normal, excepting the angle which the latter makes with the inferior wall of the meatus, viz.: 51° ¹

The osseous tube is contracted. The measurements of the tympanum are as follows: Upright diameter 9 mm., diameter of the roof 8 mm., of the floor 5 mm. The mucous membrane on the floor of the tympanum and at the approach to the round window is thickened, while the latter is closed by a connective-tissue membrane. The promontory is very flat, its thickness from the anterior wall to the scala tympani measuring only 3-4 mm. The posterior wall of the tympanum in the region of the descending part of the facial nerve is sclerosed and hardened, while the Fallopian canal, at more than one spot, is nothing more than a gutter covered with periosteum, as in animals. The antrum is contracted. The malleo-incudal articulation on this side is normal. The condition of the stapes will be mentioned further along. The intrinsic muscles are unaltered.

¹ Inasmuch as we cannot apply a quadrant to the *Mt* for the purpose of measuring its angles (v. Troeltsch), we have resorted to the following method: The outer halves of the osseous meatus are sawn off, and the internal space filled with liquid paraffine. After the latter has hardened, the tendon of the tensor tympani and the incudo-stapedial articulation are divided, and the lateral portion of the petrous bone separated from the medial portion in such a manner that on pushing a blunt instrument through a small artificial opening on the inner surface of the inferior periphery of the *Mt*, the hardened mass of paraffine can be pushed out *in toto*. We can, from this cast, determine the angles of the *Mt* in the most accurate manner possible.

Left Petrous Bone.

The ext. aud. meatus is normal; the inferior angle of the *Mt* 89° . The osseous tube is wider, the tympanum more spacious, and the promontory more projecting than on the right side. The floor of the tympanum is 6 mm. broad. The entrance to the round window is contracted. The malleo-incudal and incudo-tympanic articulations are ankylosed. The facial canal offers the same anomaly as on the right side.

MICROSCOPIC EXAMINATION.

After treating both temporal bones for two days with a 2-per-cent. solution of osmic acid, the bony tissues became decalcified.

Right Petrous Bone.

While making a section at the posterior margin of the oval window, and vertical to the longitudinal axis of the pyramid, we came, as often before noticed, upon a hard, yellow, osseous nucleus, which could not be divided until we struck a sharp blow upon the back of the knife blade. It measured longitudinally 6 mm.; it was $1\frac{1}{2}$ -5 mm. broad. It embraced the ampullar end of the horizontal and posterior semicircular canals.

The membrane of the round window is preserved; the orifice of the latter is narrowed and filled with connective tissue, the meshes of which contain numerous fat-globules, tinted black by the osmic acid.

The space between the limbs of the stapes is filled with connective tissue. A cross-section of the limbs shows that they do not consist of solid bone, but are hollow, the concavity being filled with delicate connective tissue, provided with small round cells and a few vessels. The depth of the niche in which the oval window lies is $3\frac{1}{2}$ mm. The plate of the stapes is 2 mm. long. The stapes ligament is ossified.

The bony capsule of the cochlea, near the recessus hemisphericus, includes an extensive district, whose histological structure is quite noteworthy, in so far as it lacks the essen-

tial attributes of organized bone. It consists chiefly of cartilaginous cells, interspersed with a few darker clusters of granules (molecular crumbs of lime). A few filamentous cones, some brighter, some darker, precisely like those which Virchow¹ has observed and depicted in rachitic bones, run in various directions toward the recessus hemiellipticus.

The blood-vessels of the entire labyrinth are normal, but extremely congested.

The modiolus of the cochlea contains a large amount of granular brown pigment, lying partly in cells, and partly in the lymph-tracts.

Although our method of examination particularly favors the coagulation of lymph in the labyrinth, the almost total occlusion of the canals of the cochlea by a yellowish, firmly coagulated, lymph-like substance, as well as the intimate connection of the latter with the membrana tectoria, was exceedingly remarkable. The scalæ of the cochlea were abnormally and irregularly curved and inclined to be angular. The microscopic condition of the auditory nerve will be described in speaking of the left temporal bone.

The left temporal bone contains a bony nucleus like the right.

The entrance to the round window is very narrow, only $\frac{1}{2}$ mm. in diameter. The structure of the occluding mass is similar to that on the right side.

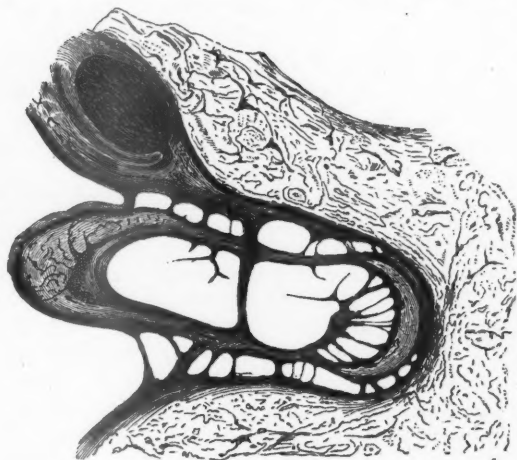
The niche in which the oval window lies is still deeper than on the right side. The plate of the stapes has disappeared, its position being occupied by bony tissue, which extends uninterruptedly into the wall of the vestibule.

The limbs and head of the stapes have given way to a cone or slipper-shaped body with a bony periphery and a central portion composed of connective tissue, fat, and small round cells.

Explanation of the adjoining figure.—It represents a section vertical to the longitudinal axis of the temporal bone, continued through the middle of the left stapes and the adjacent labyrinth.

¹ "Cellular Pathology."

thine wall (Hartnack $\frac{2}{3}$). To the left and upward we see the section of the facial nerve, with its open gutter to the right and downward. The stunted stapes is attached to the various portions of its niche by bands and connective-tissue fibres. The large and nearly empty cavity in the drawing was filled with small cells, etc., directly after preparing the specimen (compare text), but they fell out before the drawing was made. There does not seem to be any thing which bears the least resemblance either to the ligaments or to the plate of the stapes. The rest of the description is contained in the text. Besides this, the whole space occupied



by the stapes is crossed by numerous band-like fibres which extend from the bony periphery of the before-mentioned cone to the mucous membrane which lines the various portions of the niche, so that in this way the stapes which has undergone such extraordinary alterations is closely united with the neighboring region. These bands possessed a fibrillar structure, and were interspersed with oval cells having a single nucleus.

The entrance of the porus acusticus is contracted and horizontally oval: its longer diameter measuring 4 mm, its shorter diameter 2 mm.

The left pyramid also contained a bony nucleus in the same position and of about the same size as that on the

right side, as well as the same sort of yellow, fibrinous coagulum in both scalæ of the cochlea.

Both auditory nerves exhibited about the same structure within the porus acusticus. The ganglionic cells were full of pigment. The fibres were of a sepia tinge, partially broken up into tænia-like members with remarkably smooth and regular lines of demarcation, and axis-cylinders which were distinctly visible although exceedingly minute. Many of these fibres still contain the members, just described, in complete contact (Engelmann), while the distinct transverse lines probably exhibit those spots which Ranvier regards as knots in the nerves.

After the police authorities had discovered the personality and residence of the deceased, we sent the following questions to the burgomaster of the town. These questions and their answers are here appended:

Ques. Was K. only dumb, *i. e.*, without the gift of speech, or was he both deaf and dumb?

Ans. K. was dumb, and his hearing was very poor.

Ques. Was he *totally* deaf, or could he still hear a few words, or music, or noises?

Ans. He could still hear.

Ques. Was he born deaf, or did he acquire his deafness?

Ans. He was born deaf.

Ques. In the latter case, did he go to school when a boy, and if so did he learn any thing while there?

Ans. He could only go to school for a short time, as the teacher sent him away.

Ques. Did he suffer from any severe diseases in childhood? if so, name them.

Ans. He was sickly from childhood. The diseases from which he suffered are unknown.

Conjectural origin of the anatomical alterations.

The anatomical alterations of the temporal bones as above described were evidently both congenital and acquired.

Amongst the congenital alterations we may classify:

(a) *On the right side*; the imperfect ossification of the limbs of the stapes (cavity).

(b) *On the left side*; the absence of the plate of the

stapes, the low stage of development of that bone (club-like structure of which only the periphery was ossified¹) as well as the imperfect ossification of the facial canal on both sides. Amongst the *acquired alterations* we may include the distinct hyperostosis on both sides at the inner (labyrinthine) and posterior walls of the tympanum, the greater depth of the entrances to the labyrinthine windows thus caused, the noticeable contraction of the internal auditory meatus, the thickened and angular condition of the scalæ of the cochlea, the constriction of the entrances to the round windows, and, finally, the transformation (on the right side only) of the ligamentum annulare into osseous substance.

It is very probable that all of these conditions depend upon various irritative processes, at an early age, in the pyramids of the temporal bone. In addition to those already mentioned we classify as *particular* alterations, the region close to the right recessus hemisphericus (consisting of cartilaginous cells and clusters of granules instead of bone) as well as the filamentous cones which extend toward the right recessus hemiellipticus in various directions (compare *antea*). The latter alterations are evidently due to some *rachitic process*.

Finally, we do not at all conceal from ourselves the difficulty which lies before us in differentiating these alterations according to their origin, and we are quite willing to accept the objection that some of those which we have regarded as *acquired* may possibly be attributed to a disturbance in development.

Inasmuch as the question of the development of the stapes is not yet settled (compare Kölliker *ubi supra*) we will not add any further suppositions concerning the condition of this bone. To judge from our case, however, it would appear somewhat more probable that the stapes is developed from some projection of the labyrinthine wall (Parker and Gruber).

We meet with great difficulties in endeavoring to harmonize the functional disturbances (the actual condition of

¹ Compare Kölliker: *Entwicklungsgeschichte*, 2te Aufl., p. 478, where he says: "The human stapes is originally a round, club-like body, which later becomes perforated by absorption and gradually obtains its typical form."

which is based upon the inadequate data of a layman) with the anatomical alterations.

The numerous experimental investigations which we have made concerning the amount of hearing in cases of congenital occlusion of both auditory meatus, lead us to adopt the opinion (in opposition to Knapp) that *qualitative sensations of sound are perceived by bone-conduction alone*.

Although the patient was dumb, the alterations in the brain and its membranes do not necessarily presuppose absolute deafness. "He could still hear." It is indeed much more plausible to assume that sounds were perceived, even though imperfectly, by bone-conduction. For although the ligamentum annulare on the right side had undergone ossification, and the plate of the stapes on the left had disappeared, nevertheless the condition of the round window would certainly have permitted the labyrinthine fluid to vibrate. If we do not accept some such view as this, then the nearly normal condition of the membranous labyrinth, as well as of the fibres of the auditory nerve in the internal auditory meatus and in its terminal filaments, must seem enigmatical when viewed in the light of general pathology. Or even if we agree that the atrophy of the nerves from non-use advances but slowly, the entirely negative condition of the nerve in this respect would make it impossible for us to explain this case unless we resorted to some such view of the value of bone-conduction as we have just expressed because the patient had reached middle age.

The angles of the membrana tympani deserve still further mention. The inferior angle on the right side measured 51° , on the left, 89° . The extraordinary difference of 40° indicates an irregular development of the cranium.¹ V. Troeltsch gives the normal superior angle as 140° ; the inferior would therefore measure about 40° . Hence in our case the inferior angle on the right side measured 10° , and on the left 50° more than the normal. It is of course quite possible that this condition depended upon an abnormal development of the cranium, but unfortunately we are unable to prove any thing definite in this respect.

¹ R. Virchow: *Gesam. Abhandlungen zur wiss. Med.*, p. 891. "Ueber den Cretinismus, etc., und über pathol. Schädelform."

HYPEROSTOSIS AND EXOSTOSIS: ANCHYLOSIS OF
THE HEAD OF THE HAMMER, BONY OCCLUSION
OF THE ROUND WINDOW, AND COLLOID DEGEN-
ERATION OF THE AUDITORY NERVE IN THE
PETROUS BONE OF AN AGED LUNATIC AF-
FECTED WITH HALLUCINATIONS.

BY DRs. S. MOOS AND H. STEINBRÜGGE, OF HEIDELBERG.

Translated by JAMES A. SPALDING, M.D., Portland, Me.

THE following specimen preserved in alcohol was taken from a woman aged 80, who died in the prebendary house at Basel.

History.—Madam G. was at first only affected with hallucinations, accompanied with very active subjective sensations of light and sound. Otherwise her psychical life was normal. It was not until a later date that the other senses became affected, that the patient suffered from delusions, and finally went crazy. The hearing was never but slightly diminished. The disturbances of the senses were first noticed in 1875, then ceased for a few months, reappeared in 1876, and persisted until the patient's death, May 5, 1880.

Autopsy.—*Anatomical diagnosis:* *nephritis chron. interstitialis, emphysema, chronic bronchitis, hypertrophy of the heart, fatty degeneration of the right ventricle. Hydropsy.*

The cranial cavity is symmetrical, narrow, short, and high; dura mater adherent to the calvarium. Much bloody fluid escapes while removing the brain.

The pia mater is oedematous and milky-looking; the carotids

extremely calcified, as well as the basiliary artery at its point of division. The same condition is seen in the left vertebral artery.

The right lateral ventricle is moderately enlarged, and contains a pale fluid. The brain is coarse, and its gray substance atrophic; the white substance full of hemorrhagic specks. The left lateral ventricle is also enlarged; ependyma on both sides thickened.

The middle ventricle is enlarged, lateral plexuses pale-red, and crowded with transparent cysts as large as a bean. The right central ganglia contain a few small brownish patches of softening; both lower cornua dilated.

Miliary aneurisms in the pia mater on both sides. Weight of brain 1130 grammes.

As the temporal bone had already been lying in alcohol for a long time, we examined it without using any reagents, and before decalcification had been caused.

Condition.—The dura mater is everywhere adherent, the whole temporal bone hyperostotic. The posterior surface of the pyramid, as well as the base of the anterior surface, exhibits little nodules of ossification. The *posterior surface* of the bone offers two remarkable points: first, the orifice for the passage of the vagus, glosso-pharyngeal, and accessory nerves, which normally is only separated from the jugular vein by a tip of the dura mater, is here divided from the vein by a bony bridge which is 5 mm. wide;¹ secondly, a smooth triangular exostosis extends from the aperture of the aqueductus vestibuli to the medial edge of the porus acusticus internus, which has become contracted into a slit-shaped orifice. The base of the triangle lies near the superior petrosal sinus, and measures 2.7 cm. It projects above the porus acusticus internus in the shape of a club, from the summit of which springs a small bony spur, which in turn rises above the internal auditory meatus. The summit of this pyramidal exostosis, the lateral limb of which measures 2.2 cm., the medial limb 2.1 cm., reaches as far as the above-mentioned bony bridge, between the entrances of the nerves and vessel. The eminentia arcuata

¹ Hauerwaas, *Monats. f. Ohr.*, 1880, No. 5: Scheinbare Trennung des Foram. Jugul. durch einen Knochenkamm, etc.

juts forward considerably. From its centre springs a ridge-like exostosis, which stretches to the squamous portion of the temporal bone. The hyperostosis has narrowed the calibre of all the bony sinuses.

The external auditory meatus is very much contracted by the protrusion of its anterior bony wall. The inferior angle of the *Mt* measures 82° . The circumference of the *annulus tympanicus* is extremely hyperostotic: the head of the hammer is ankylosed with the lateral and superior wall of the tympanum. We cannot give any definite information concerning the condition of the anvil, since it was dislocated while preparing the specimen. The articulation between the stapes and vestibule is movable: *processus cochleariformis* highly developed, mucous surface of *Mt* discolored, mucous membrane of the tympanum thickened. The floor of the tympanum is thickened by several *mm* (sclerosis). The bony tube and ostium tympanicum are extraordinarily narrow; round window occluded with bone. A transverse section of the pyramid shows that it has undergone ivory-like sclerosis throughout. The modiolus of the cochlea near the first convolution is 3 *mm* thick in transverse diameter, while the intermediate walls of the cochlear capsule are very thick and hard. The facial canal is narrow and the nerve itself thin, but special inquiry showed that the patient had never suffered from irritation or paralysis in the region to which this nerve is distributed. In point of fact the nerve appeared normal under the microscope, while on the contrary the *nerve fibres of the auditory nerve had undergone colloid degeneration*. It is unfortunate that we cannot give any trustworthy information concerning the membranous structures of the labyrinth, owing to their protracted preservation in alcohol.

Origin of the alterations in the temporal bone.

These may justifiably be referred to the extension of the chronic inflammatory processes in the calvarium and dura mater. It is probable that the morbid process had existed for years, since the excessive sclerosis of bone can be traced even into the central portions of the petrous bone, the

modiolus, and the scalæ of the cochlea. Further alterations in the temporal bone, which we will here pass over in silence, may be regarded as secondary symptoms of the pathological process in the cranium.

Connection between the functional disturbances and the pathologico-anatomical conditions.

The clinical history does not mention any precise determination of the amount of hearing. Still, we are justified in believing that the sentence "hearing itself was but slightly diminished," referred simply to the right ear. The left ear must have been totally deaf; the deafness being undoubtedly dependent on ankylosis of the head of the hammer, bony occlusion of the round window, or finally upon the colloid degeneration of the auditory nerve.

We have the right to refer the hallucinations of hearing to some central disturbance, especially when we recall this condition of the auditory nerve. If we were inclined to adopt the opinion that the peripheral alterations might have caused the subjective sensations of sound, and these, in turn, the hallucinations of hearing, with the assistance of a deranged brain, we must nevertheless remember that the hallucinations continued to the end of life, while the colloid degeneration of the nerves must surely have originated long before death, so that a peripheral irritation could not possibly have been conducted to the central organ.

We will simply remark, concerning the magnitude of the angle of the *membrana tympani*, that as it measured nearly 90° , we can exclude an early development of the alterations in the cranium and petrous bone. Otherwise the angle would undoubtedly have been a great deal smaller.

A CASE OF DOUBLE LABYRINTHINE AFFECTION,
WITH STAGGERING GAIT AND PERMANENT AB-
OLITION OF HEARING AFTER MUMPS.

BY DR. S. MOOS, HEIDELBERG.

Translated by JAMES A. SPALDING, M.D., Portland, Me.

THOSE interesting cases of affection of the ear after mumps, which were lately reported and discussed at the meeting of the American Otological Society,¹ have led me to publish the following account of a similar case which recently came under my observation.

W. S., æt. 13, consulted me May 10, 1881. His father said that the boy had been affected for ten days in the previous February with double parotitis, which was at that time epidemic in the neighborhood. Hearing was totally destroyed on the fifth day; vomiting set in on the sixth day; and on the eighth, on leaving his bed, the boy staggered as he walked. The latter symptom gradually disappeared. The patient never lost consciousness. A course of iodide potass.—20 grammes in all—had been of no avail. We advised further use of this remedy, and a visit to some watering-place. We never saw the case again. The right *M* was somewhat more opaque than normal; the left more concave than the right.

The patient had entirely lost his perception of speech. He seemed to have perception by bone-conduction (in the right ear) of the tuning-forks *C* and *C'*; *A'* not heard. There was no perception at all in the left ear, even by bone-conduction.

If metastasis into other organs had never been observed

¹ These ARCHIVES, x, 274.

in cases of mumps, we might easily be induced to imagine that the inflammation was propagated directly from the parotid to the organ of hearing, although along a path of which we are still in ignorance. Nevertheless, in reflecting upon the fact that, *e. g.*, both testicles are occasionally affected in mumps, it may be quite possible that, in many cases of parotitis, various substances enter the circulation and give rise to obstructions and secondary disturbances in organs, such as the testicles or labyrinth, with complicated circulatory apparatus, particularly when the escape of blood is in any way hindered. The fact that the patient did not lose consciousness during the whole course of the disease proves that this was not a case of basilar meningitis, but simply an affection of the labyrinth.

The other functional disturbances, viz., the staggering gait and the total deafness, can be most easily explained by a double labyrinthine affection. If the boy estimated the perception of the tuning-forks correctly, we might assent to the opinion that some of the fibres in the right cochlea (those at least which serve for the perception of deep tones) were not totally destroyed by the disease in question.

A CASE OF DIPLACUSIS.

By DR. H. STEINBRÜGGE, OF HEIDELBERG.

Translated by JAMES A. SPALDING, M.D., Portland, Me.

THE case now before us offers nothing new, but may possess some interest, owing to the fact that the patient was very musical, so that his observations are to be regarded as entirely trustworthy. If the following account does not seem sufficiently full, I would simply say that the patient was seen only once.

Oct. 20, 1881. Mr. H. W., æt. 52, consulted me for a purulent discharge from his left ear, which had lasted since his childhood. He was not sure whether his right ear had ever suppurated or not, but he had a faint recollection of an "ulcer" in this ear, from which blood and pus were evacuated. He had long since totally lost his hearing on the left side, although it had always been quite satisfactory on the right until lately, when he suffered from occasional colds, during the continuance of which his hearing decreased very noticeably.

One evening in March, 1881, the patient felt in fine spirits, and was humming a song to himself, when he suddenly noticed that he seemed to be singing a duet. He heard the true tone, as well as the major third above. He was not sure upon which side he heard the higher tone, nor could he accurately define the number of octaves which were affected with the double hearing. This condition persisted for some time, when all varieties of music created so great a dissonance in his ears, that he was forced to deprive himself of all his former enjoyments of that sort. At the same time he suffered from subjective noises (hissing, seething of a steam-boiler), and had several attacks of vertigo, during which

he staggered to and fro, as if he had been drunk. He thought that the vertigo was due to some gastric disturbance, since it was accompanied with eructation and occasional vomiting.

During the last month the perception of tones has again become pure, while the vertigo has entirely disappeared. Last evening the patient thoroughly enjoyed an opera from beginning to end; all the tones seemed pure, and both high and low tones could be heard with equal clearness.

Examination of the left ear showed a round central perforation of the *Mt*, into which the tip of the handle of the hammer projected. The rest of the membrane was thickened as usual, and of a grayish-red tinge. The secretion, if any, was very slight. The right auditory meatus could not be thoroughly examined, owing to the presence of a firmly clinging bit of cerumen, which the patient declined to have removed. Nevertheless, a cicatrix could be seen in the posterior portion of the *Mt*, and a calcareous concretion in the anterior portion.

H, loud voice, Right, 1-1.5 M; Left, o.

H, loud-ticking watch, Right, 0.02 M; Left, o.

The tuning-forks C and C were perceived *on the right side only*. I had, at the time, no higher tuning-forks or other instruments for properly testing high tones. Still, it is hardly probable, judging from the other tests, that even these would have given any different results.

After Politzer: *H, loud v* Right, 5 M; Left, o. The mucous membrane of the naso-pharynx was thickened and reddened, and the patient complained of frequent attacks of coughing and cold in his head.

To conclude: the left ear was completely deaf for aërial and bone-conduction. In the right ear, if we pass over in silence the traces of a former purulent inflammation of the middle ear, the deafness which had of late been on the increase could undoubtedly be referred to catarrhal contraction of the tubes from chronic naso-pharyngeal catarrh, because the entrance of air produced an immediate and decided improvement of hearing. This fact would tend to demonstrate that the right labyrinth was intact.

If we take Helmholtz' theory as our starting-point in the

interpretation of this case, there can be no doubt that in March the *left* labyrinth was attacked with an inflammation which affected the cochlea as well as the region to which the ramus vestibuli is distributed. The inflammatory processes in the cochlea caused at first a symmetrical lowering of pitch throughout a large portion of the zona pectinata. When, therefore, a tone was struck, it was not a fibre symmetrical to one in the zona of the right cochlea which was set into simultaneous vibration, but a shorter string (lying nearer the round window) which had become attuned a third lower by the inflammatory lowering of pitch, whereby again a nerve fibre accustomed to the perception of a *higher* tone was excited into vibration, instead of the nerve fibre symmetrical to that in the healthy ear. *Hence the major third was heard in the left ear.* At a later date, owing to the symmetrical lowering of pitch in the zona pectinata, this organ or the organs of Corti must have undergone a greater disorganization, since all tones sounded discordant, and the sound of music became intolerable to the patient. The subjective noise was of course due to the irritative condition of the left ramus cochleæ.

The inflammatory irritation of the ramus vestibuli in the vestibule and ampullæ expressed itself in the attacks of vertigo, and, secondly, by eructation and vomiting.

The *apparent* recovery depends, in all probability, upon destruction of the conductive capacity of the left auditory nerve, or of its terminal branches within the labyrinth, by some insidious chronic inflammation. The opera was undoubtedly enjoyed by the right ear alone, as is evident from the tests of hearing.

It may appear extremely doubtful whether the cessation of the vertigo and vomiting depended upon complete restoration of the structures supplied by the ramus vestibuli, or upon paresis or even destruction of this nervous terminal organ, so that even *the persistence of the inflammation in the ampullæ or semicircular canals was no longer perceived by the central organ.* The latter view seems the more probable, when we consider the intimate connections of the various subdivisions of the labyrinth, as well as from analogy with

other cases. Hence, this case cannot be regarded as the "*cessation*," to say nothing of the "*cure*" of a labyrinthine affection. All that we can therefore do for the patient, is to advise careful dietetic rules and protection of the *right ear*, for which latter purpose we resort to the usual treatment of chronic naso-pharyngeal catarrh, and to the use of the air douche three times a week.

CONGENITAL FIBROUS CLOSURE OF THE
MEATUS. OPENING FRUSTRATED BY
AUDITORY HÆMATOPHILIA.

By H. KNAPP.

Congenital closure of the entire external ear canal by soft tissue is, so far as my experience goes, rarer than bony closure. A well-marked case of that kind came under my care last autumn, and seemed to offer excellent chances for the restoration of the canal, but the attempt failed on account of a marked hemorrhagic diathesis of the patient. As the blood pervaded the whole parotid region and a part of the neck, I thought a report of the case might not be without interest.

Mrs. M. M., æt. 23, of Omaha, consulted me Oct. 17, 1881. Her hearing had been tolerably good until five months previously, when she poured cold water over her forehead and head, and in the night became almost totally deaf, suffering from pain and buzzing in the head, dizziness, nausea, vomiting, and uncertainty in walking. The cerebral symptoms lasted a week, the buzzing four weeks, the hearing returned gradually; she menstruated at the proper time, three days after the attack.

When she came to me, I found her a healthy-looking, robust woman. She suffered, however, from dysmenorrhœa, and had no children, though she had been married several years. She was subject to colds, her tonsils were swollen, and the posterior wall of the pharynx was partially cicatricial.

Both auricles were well developed. The right auditory canal was normal, the left completely closed, its orifice indicated by a shallow depression, which, when pressed upon with a probe, gave

the resistance of soft tissue, not of bone. The right membrana tympani was dull and somewhat sunken, white at the periphery ; $\frac{1}{2}$ $\frac{1}{2}$, bone-conduction good, $V \frac{1}{2}$, on both sides. On the left side the tick of the watch was more distinctly heard from the mastoid process than from the ear. The tick appeared louder, both from the auricle and the mastoid of the left ear, when the right ear was held closed, than when it was open. The tuning-fork was heard evenly when passed up and down before the left ear, but in puffs when moved before the right ; placed on the forehead between the eyebrows it was heard better on the left side than on the right, even when the right ear was held shut, whereas pressure on the left closed meatus made no difference.

Inflation by Politzer's method was felt in the left ear, not in the right ; inflation with the catheter in the right ear, during the act of swallowing only, in the left also when the tubal muscles were at rest.

I treated her for nine days, and examined her repeatedly. Her hearing was raised to $V \frac{1}{2}$ on either side ; otherwise the conditions of both ears remained unchanged.

From the positive result of inflation through the left E. tube, and the good hearing power on the left side, which was not diminished when the right ear was held closed, I inferred that the left tympanic cavity and drum-head must be well developed, and that the innermost portion of the external ear canal might, perhaps, also be open. I, therefore, asked the patient to let me try to restore the left ear canal. She gladly consented. On Oct. 26th I thrust a narrow-bladed knife (Graefe's cataract knife) one inch deep into the soft tissue which filled the canal. I felt no bony resistance at the point, but felt it well on the side when, in withdrawing the knife, I enlarged the wound. The moderate bleeding showing no tendency to stop spontaneously, I inserted into the wound a perforated silver tube of 3 *cm* in length, and 3 *mm* in thickness, and put a pad of absorbent cotton over its external end. The wound discharged a sanguinolent fluid for the next 24 hours. When the dressing and tube were removed, it bled freely again. The surrounding parts were swollen, but not tender to the touch. A new tube was inserted. On the third day the condition was the same, only the swollen parts were suffused with blood. Patient felt well, however. In the evening she went out, and in the night she had considerable pain in the ear. When she

came to me on the fourth day, I found the discharge bloody and slightly offensive, the whole pre-auricular and infra-auricular regions considerably swollen. This condition was increased on the fifth day. The whole parotid region, as well as the adjacent part of the cheek and neck, was swollen as in mumps, tender to the touch, and of a bluish-red and yellow color, showing an extensive extravasation of blood. The bleeding from the wound continued free whenever the tube was removed. The patient was feverish, felt uneasy, and informed me that whenever she had cut herself she had had the greatest trouble to still the bleeding, and she had repeatedly had very profuse epistaxis. Now no longer doubting that she suffered from a pronounced hemorrhagic diathesis, I inserted a smaller and thinner silver tube into the wound, and prescribed 0.20 quinine to be taken three times daily. She improved at once, and in about two weeks the swelling and suffusion in the parotid region had disappeared. The bloody discharge from the wound, though moderate in quantity, did not cease, and fresh bleeding ensued as often as the tube was removed. I inserted a still thinner and shorter tube, which was changed twice daily, and always covered with the absorbent cotton. Although suppuration was absent there was no tendency to cicatrization of the walls of the new canal. I continued the treatment over seven weeks, and all that time blood escaped freely when the tube was removed, and oozed out when the tube was in the wound. I did not venture to insert a laminaria bougie for fear of a repeated effusion of blood into the parotid region. At last, Nov. 3, 1881, I gave the treatment up, left the tube off, whereupon the wound speedily healed, showing at the orifice of the ear canal a deeper depression than had been there before the operation. Otherwise nothing was changed in the patient's condition, except that her naso-pharyngeal catarrh was improved, and her hearing better than at the time when she first presented herself.

Remarks.—Apart from the rarity of the affection, and the unexpected complication with hæmatophilia, the case offers still this interesting feature, that blood found its way through the interruptions in the cartilage of the ear canal—*incisuræ Santorinianæ*—into the substance and surroundings of the parotid gland. It is well known that the glandular tissue touches the cartilage of the ear canal, and that pus from the ear sometimes infiltrates the gland, while on the other hand

pus from the gland may find an outlet into the ear canal. Otorrhœa as a symptom of primary or metastatic parotitis has not infrequently been observed and described; the most notorious instance of the latter kind is the case of the late President Garfield.

A CASE OF TRANSIENT POISONING FROM THE
INSTILLATION OF A FEW DROPS OF ATRO-
PIA INTO A HEALTHY EAR CANAL.

By H. KNAPP.

THAT a half-per-cent. or one-per-cent. solution of atropia when instilled into the eyes of persons particularly susceptible for this drug, may produce inordinate and poisonous effects, even after a few applications only, has been observed everywhere, and a number of such extraordinary cases have come to my own notice, but that the same effects may be produced by instillations into a healthy ear canal, was unknown to me until, quite recently, such an instance occurred in my private practice. The history of the case is as follows:

Mrs. J. L., æt. 25, a healthy lady of New York, consulted me Nov. 14, 1881, on account of pain in and especially below her right ear, from which she had suffered, more or less, for two years. I found her hearing normal, her right drum-head slightly pinkish, the bright spot divided, after inflation normal; mild catarrhal pharyngitis. The left ear normal. The pain of which she complained being quite out of proportion to the symptoms of aural catarrh, I ordered, besides chlorate of potash for the nasopharynx, a half-per-cent. solution of sulphate of atropia warm to be instilled into the ear two or three times daily, since this remedy has of late years been favorably spoken of as alleviating pain in the ear. On the evening of the 14th of October she put a few drops of the warmed solution into the ear. The pain diminished, and she had no unpleasant symptoms from the

remedy. The next day, at 8 A. M., she dropped four drops of the same solution in, and put some wadding into the canal. The pain subsided, and she felt well until 12½ P. M., when her hands and fingers began to swell and became stiff, her face was scarlet, her eyes swollen, her throat excessively dry, her tongue thick, her lower lip swelled and hung down, her heart beat violently, and she felt intensely hot. Cold water gave her no relief. These symptoms grew steadily worse until 5 P. M., when they began to abate, and at 6 P. M. she felt well again. When she came to me the next morning, I found her *in statu quo ante*. As the atropia seemed to have relieved her otalgia, I told her to dilute the atropine solution, and instill two drops when she felt worse. This was done, and had no poisonous effect. The pain gradually disappeared.

Her physician informed me that on other occasions he had also noticed her unusual susceptibility for atropia. In the instance related above the absorption of the drug must have taken place through the healthy skin, probably the sudoriferous glands, as there was no ulcer, not even an excoriation, in the walls of the ear canal.

ACUTE OTITIS MEDIA SUPERVENING ON OTITIS MEDIA PURULENTA CHRONICA,

RESULTING IN NECROSIS OF TEMPORAL, OCCIPITAL, AND PARIETAL
BONES, WITH CLOSURE OF LATERAL SINUS AND
ABSCESS OF CEREBELLUM.

By W. OLIVER MOORE, M.D., OF NEW YORK.

W. P., æt. 50, German, machinist by occupation.

Previous history.—Three years since he had an attack of earache, followed by a discharge of pus from the right ear. The acute symptoms rapidly subsided, leaving only a slight discharge, which has continued to the present time.

Present condition, Sept. 14, 1881.—The patient, while bathing, got salt water into the ear, causing great pain at the time, increasing in the following twenty-four hours. When first seen on Sept. 15th the meatus was filled with pus, the membrana tympani perforated, the tissues over the mastoid much swollen, R H D = $\frac{0}{48}$. An incision was immediately made over mastoid three fourths of an inch long and down to the bone, thoroughly dividing the periosteum; no pus escaped. The wound was dressed by carbolized tent.

Sept. 22d.—Patient lost sight of since last date, returns with increased, swelling and pain over mastoid region. The former incision, partly closed was now enlarged, this time with an escape of pus. A probe can be passed through carious bone into the mastoid cells.

Sept. 29th. Wound dressed daily; large amount of pus escapes from it, also from meatus.

Nov. 12th. Complains of pain in head; pus still escaping; bone spongy.

Nov. 15th. Hardly able to walk; great pain in head; loss of

appetite, nausea and vomiting. Less pus from wound and meatus ; temperature 100° F., pulse 78 ; rational but lethargic.

The temperature fluctuated from 98.5° F. to 100° F., this being the highest, except that reached one hour before death, when it rose to 105° F.

The pulse varied from 60 to 80, and reached 120 only one hour before his demise.

From Nov. 16th to the 18th he remained in a semi-conscious condition, pus from meatus and wound escaping in small quantity only.

Nov. 19th. Right side, facial paralysis, and marked divergent strabismus ; pupils contracted.

An ophthalmoscopic examination made at this time showed slight venous engorgement, otherwise appearances were normal.

Nov. 20th. Death, after four hours of coma.

Post-mortem appearances.—Autopsy four hours after death. Extensive caries was found extending backward and upward from the mastoid process as far as the parieto-occipital suture, and upward to the temporo-parietal suture ; an opening was found through this suture (caused by an erosion of the borders of the suture), leading into the cavity of the skull, being on a level with the lateral sinus.

A probe passed through the external opening led into the lateral sinus, and was arrested in its course where the sinus joins the internal jugular vein. The sinus was like a fibrous cord, being very much thickened.

The meninges were very much congested, especially so at the posterior regions. Dura mater adherent at posterior third of longitudinal sinus ; also small quantity of lymph between it and the cerebral substance.

In the posterior fossa a layer of pus was found between the dura and skull, the bones being eroded and softened. Posterior part of right hemisphere more elevated than opposite.

The right lobe of the cerebellum contained an abscess as large as a black walnut, situated in the centre of the lobe ; the membrane enclosing it was quite thick ; the contained pus was fetid.

The mastoid cells were free of pus ; the tympanic cavity contained a few drops only.

The ear disease being the starting-point, necrosis of cranial bones following, then phlebitis of lateral sinus and abscess of the cerebellum ; the patient finally succumbed to the acute meningitis.

DOUBLE HEARING DURING THE EXHIBITION OF IODIDE OF POTASSIUM.

BY DR. S. MOOS, OF HEIDELBERG.

Translated by JAMES A. SPALDING, M.D., Portland, Me.

THE patient, æt. 40, had suffered for a long time from "nervous asthma." In the beginning of July, his medical adviser ordered potass. iodid., 10 grains daily, which was continued till July 14th. It was then omitted on account of well-marked ozæna, diminution of appetite, and disagreeable itching on the arms and legs. On July 15th, the patient's left ear felt numb, and on playing the piano he was astonished to hear double (one half tone). The notes affected were :



D was still almost pure, but D^\flat and C^\flat , B^\flat and A^\flat , and so on, were harmonious, the lower tone being heard in the left ear, the higher in the right. From A^\flat downward the tones were again pure.

July 16th, the anxious patient presented himself with extensive iodide exanthema over the shoulders and on the extremities, violent sneezing, and excessive lachrymation. Nothing abnormal could be discovered in the ear. I simply advised him to discontinue the iodide. Double hearing

continued till July 18th, 4 P. M., when it disappeared and has not since been noticed.

I suspect that at the height of the iodide cure, a similar process to that upon the skin was going on in the cochlea, and that minute petechiæ on the zona pectinata caused an abnormal tension which caused the double hearing.

A CASE OF CHRONIC SUPPURATIVE OTITIS, WITH
EXOSTOSIS OF THE AUDITORY CANAL—ABSCESS
OF THE BRAIN—DEATH—AUTOPSY.

BY DR. G. S. MUNSON, OF ALBANY, N. Y.

A fatal result ensuing from chronic otitis media suppurativa is no new thing to aural surgeons, yet when occurring in connection with an exostosis confining the tympanic secretions, its history may become instructive and worthy of record.

I was called Nov. 8, 1881, in consultation with Dr. Van Der-veer, of Albany, to see Miss K. W. H., thirty-nine years of age, good constitution, but much reduced by anxiety and constant watching with a sick parent. Dr. V. had first seen her three days previously, and found her suffering from what was then considered an attack of nervous prostration and neuralgia, resulting from a recent cold. She complained of slight pain in her left ear. The doctor ordered Brown-Séquard pills with quinine. On inquiry the following facts were elicited.

At the age of five years, during an attack of scarlet fever, a discharge had commenced from the left ear, which had continued almost uninterruptedly to the present, and had been accompanied by occasional attacks of earache. Otherwise her health has been good. As the result of an extension of the tympanitic inflammation to the Fallopian canal the facial nerve on the affected side had been partially paralyzed. She was treated by electricity with considerable benefit.

Status Præsens.—Left ear alone affected. Had vomited during the day, which she thought was caused by indigestion. There was a slight sanious discharge from her ear, but no more in

quantity than had existed for thirty years. Examination with the speculum and reflected light rendered difficult, owing to the swelling of the tissues occluding the canal; while the auricle was blistered from the constant application of camphor. There was little pain within the ear, but the patient complained mostly of a very annoying tinnitus, for which she sought relief. No mastoid symptoms, convulsions, or paralysis. Complained of considerable headache, but it was confined to the right side. Thirst great, but relieved with lumps of ice. Respiration normal; pulse 80; the tongue slightly coated. Auditory condition: Loudest voice not heard at all; watch pressed against the auricle and over the mastoid process not heard. Says she has been completely deaf in that ear for thirty years. Eustachian tube leading to the affected ear closed.

The treatment adopted was first an endeavor to open the Eustachian tube, but this resisted all efforts with Politzer's bag; the patient refused to allow the passage of the ordinary catheter. The patient suffered so little pain in the ear that only a mild anodyne was prescribed for nights. As the tinnitus was in both ears, I thought it probably due to the quinine she had been taking, and so advised a change of tonics. The diet was made as nourishing as possible, and the patient was not allowed to sit up or see friends.

On my second visit the walls of the canal were less swollen, so that I was able to diagnose a polypus. Suspecting that the polypus might be confining the pus and producing the neuralgic symptoms, the patient was informed of my suspicions, and that an immediate operation was necessary; also that delay might be serious. She refused such treatment then; thought her ear was in every way much better; and would delay the operation till she had regained her strength.

Nov. 10th. I saw her to-day prepared to operate, but while attempting to probe the ear she refused further treatment, assuring me that she thought her ear was as well now as it had ever been, was free from pain, and that in her present weak and nervous condition she would have nothing further done till she had regained her strength. I could only leave with warning words to summon a physician at the least unfavorable turn in her symptoms. There was at this time no specially threatening symptom to arouse the apprehension of the physician, but her general condition seemed about as comfortable as it had been for some days.

On the 15th, at 1 A. M., the mother states that the patient complained of an increase of the pain within her head, and seemed a little delirious. At four o'clock the mother found the patient lying on the floor by the bed unconscious. On arrival I found the temperature 107°; pulse 110; the patient foaming a little at the mouth and lying in a comatose state from which it was impossible to arouse her; no voluntary motion. The remainder of her history is briefly told. 6 P. M., the left eye rolled in toward the nose; the irides did not respond to light; no discharge from the ear; gurgling of secretions in the bronchial tubes and throat. 9 P. M., died.

Autopsy.—The autopsy, conducted eighteen hours after death, revealed the following, the head being alone examined.

The external auditory meatus contained granulating polypoid tissue springing from the sides of an exostosis, which almost completely occluded the canal, the only opening being found with a needle in the superior and anterior portion of the meatus. The exostosis undoubtedly was a hyperplastic growth, the result of irritative processes dependent upon a chronic otorrhœa, and taking its origin from the floor and sides of the meatus close to the membrana tympani; whether single or multiple I was unable to determine. On removing the skull-cap evidences of a former meningitis were discovered on the convex portion of the cerebral lobes. At no point was pus found beneath the dura mater; but the meningeal vessels were large and exceedingly numerous. The removal of the dura showed a slight caries of the superior wall of the petrous bone immediately over the semicircular canals, but no distinct sinus leading to the internal ear could be found. There was then noticed a clearly defined spot on the meninges at the under surface of the middle lobe, circular, about an inch in diameter, with a central perforation 4 mm in length and 1 mm in breadth. A probe passed through this opening into an abscess cavity within the middle lobe of the cerebrum. On opening the cavity there was revealed an abscess the size of a hen's egg, and containing, as near as we could judge, an ounce of dark-greenish, fetid pus. In the neighborhood of the abscess the brain was much softened, but otherwise normal. The position of the abscess corre-

sponded with the perforation of the dura mater, being directly above the semicircular canals. The lateral ventricles were normal.

Remarks.—In no case is the axiom "an ounce of prevention is worth a pound of cure" truer than in the early history of ear diseases, as every otologist well knows. We cannot doubt that in the case under discussion the fatal result was but the climax of a disease of thirty years' duration.

We regret that the temporal bone could not have been obtained for minute anatomical dissection. The parts in the tympanic cavity were probably in a carious condition. The mastoid cells and antrum may have been sclerosed or little changed, for at no time were there symptoms of mastoid complication.

The indirect cause of death was an exostosis confining the tympanic secretions. The pathology of this case probably consisted in an acute inflammation, followed by supuration, which was allowed to become chronic. There then ensued a growth of polypi. This excessive granulation tissue subsequently became organized into the bony growth. These bony growths may go on increasing in size, absolutely without symptoms, till complete occlusion of the canal has resulted. Their removal is distinctly indicated when a suppurative otitis media is present, and their steady increase threatens to occlude the meatus and cause retention of pus and caries of the bone. If an operation is allowed, it should be performed early. We now know had the exostosis been removed as early as the first day on which I saw the patient it would still have been too late and impossible to have afforded permanent relief, for, judging from the greenish pus and its quantity found in the brain abscess, already fatal complications must have been in progress.

It is a noticeable feature in our case that the pus did not find a passage from the labyrinth by the aquæductus vestibuli or the internal ear canal, but worked its way through the roof of the bone immediately over the semicircular canals where the petrous portion is especially thin. There it produced pachymeningitis with perforation and a direct abscess of the middle lobe.

RESULTS OF AN EXAMINATION OF THE EARS AND THE HEARING OF 5,905 SCHOOL- CHILDREN.

By E. WEIL, OF STUTTGART.

Translated by WM. C. AYERS, M.D., New York.

EXAMINATIONS of the eyes of school-children have often been made since the first publication of Cohn, of Breslau, on this subject; the condition of their ears has, however, received but little attention.

I know of only two publications in this direction: the one from Reichard,¹ of Riga, and the other from myself.² That of Reichard is unfortunately but little known; indeed, my own attention was first called to it but a short time ago. Reichard examined 1,055 children with the watch, and found that 22.2 per cent. heard it badly, showing that this instrument is not a good one for determining the distance at which the normal ear should hear distinctly. On examining 267 children, I myself found that over 30 per cent. did not hear the whisper at eight metres.

In my earlier publication I gave a brief report on the results of a series of experiments, which I wish to publish more fully in this paper.

The probable reason why such examinations have not

¹ The influence of good hearing on the progress of school-children, by W. v. Reichard, physician to the City College at Riga. *St. Petersburger Med. Wochenschr.*, 1878, No. 29.

² a. The results of an examination of the hearing of 267 children. *Montschrift für Ohrenheilkunde*, etc., 1880, No. 12. b. Preliminary communication concerning the results of an examination of the hearing of 4,500 school-children. *Württ. Med. Correspondenzblatt*, 1881, No. 27.

been made more frequently, is to be found in the fact that we have no trustworthy method of determining the power of hearing, notwithstanding the numerous recent articles on this point. We are very much indebted to *Itard*, *Wolke*, *Saunders*, *Schmalz*, *Rau*, and recently to *Wolf*, *Conta*, *Magnus*, *Lucae*, *Prout*, *Knapp*, *Hartmann*, *Preyer*, *Wodtke*, *Hughes*, *Horting*, *Politzer*, and others, for their labors, but nevertheless, they have not as yet furnished us a method which will hold good for all cases. The watch which was first used by *Saunders*, and *Politzer's* acoumeter have only one or two tones, or sounds. The perception of these, however, does not furnish us any knowledge as to the condition of the ear in general, and especially its capacity of hearing the human voice. For practical reasons we must have a method for determining the capacity of the ear for speech, and it is to be hoped that the future will furnish us with such an instrument. According to the majority of authors, the voice or whisper is still the best method which we have,¹ but unfortunately this method leaves much to be desired, as I have found during the present series of experiments. It requires a certain extent of space, which is often not practical, since according to *Wolf*, *Chimani*, and *Hartmann*, a whisper should be heard at 20-25 metres, and frequently we can not have so large a room at our disposal. Then again, the distance at which it is heard depends upon the attention with which the person examined listens, upon the intensity of intonation, upon the measure, the articulation, and upon the particular words chosen, upon the possibility of guessing the words, the place of examination, the surroundings, and probably upon the state of the weather. Moreover, the examination of one ear is very much influenced by that of the other. Some of these objections would be found in any method, but some again arise from the voice itself. The most important of these are the intensity of the sound, and the choice of words and sentences.

The distance of hearing depends very much upon the intensity of the voice and the words chosen, but unfortu-

¹ Compare O. Wolf: "Speech and Ear," Braunschweig, 1871.

nately it is almost impossible to keep the voice at the same pitch, and again we involuntarily modulate our voice according to the distance at which we are speaking. For instance, at greater distances we speak louder than when close by, and single words not so loud as sentences, and again, some words louder than others. Words which have many vowels in them, and those with hissing sounds are heard further than others which abound in consonants. Lucaë¹ first drew attention to this through using certain words and by the use of his maximal phonometer. I have recently striven to attain an equal intensity in examinations by whispering all words in the same time, without any effort on my own part. In my experiments I did not take this precaution, and the results are not in unison, since I was forced to use rooms of different extents in the different schools. They varied in length from 7 to 25 metres, and sometimes there were more noises in the vicinity than at others. Therefore the figures which I give are not exact. In general, I can state that the figures show a great difference in the power of hearing in younger individuals, and from this fact they derive their value. I shall have accomplished my purpose if, in writing this paper, I draw more attention to the examination of the ear, and bring forward more investigation in this direction. That such will be the case I conclude from the approval which my first communication has received.

The experiments were made in one public school, three common schools, two intermediate schools, a college, one higher school for girls, and in one elementary school; in three large institutes, viz., orphan asylum, blind asylum, and a protectory.

I chose these particular schools because in them I could examine boys and girls of all classes of society.

The common schools were attended chiefly by the poorer classes, working people, etc.; the intermediate school by artisans, and the higher schools more by the better classes of society; the same being the case in the primary school. The public school of Degerloch, as is always the case, is

¹ *Archiv für Ohrenheilkde.*, Band vi.

frequented by all the children of the village, whether rich or poor.¹

All examinations were made in the following manner.

The children were brought into a room set apart for the purpose in the order of their seats in school, four or six at a time, during school-hours.

First the name and age were taken, and then their height. Asked whether they had had scarlet fever, diphtheria, ear-ache, noises in the ear, suppuration, and such like affections, and then the ears examined by sunlight, with a plane mirror. Next the distance at which they heard whispering was noted—each ear separate. Each child was placed at a distance and required to repeat what I said. I gave up the examination with the watch since I soon saw it was too uncertain, nor could I use Politzer's hammer, because it required too much space, being heard by good ears at 25 metres.

Different sentences were spoken to each child in order to obtain all possible exactness. In those cases where there were difficulties of hearing the examination was more extensive. In every result where there was doubt I recorded it *in meliorem partem*. When three children had been examined three more were taken, so that there was a continuity in experimentation which saved much time. If any one was found hard of hearing, the teacher of the class was asked as to the attention of the child, or if he had noticed it before.

The interest which the children exhibited was of great service. They all wished to hear well, and I believe that there were but few who did not try to hear the test sentences as far as possible. I would also state that they were all willing to be examined with the exception of one, whose father had positively forbidden that his child should be used for such experiments.

We will now pass on to the results, but in order to understand them properly I would like to remark, that one of the public schools is located in an old building in the middle of the city, and is recruited principally from

¹ Degerloch is a flourishing wine and grain-growing village, and to a certain extent manufacturing, situated on a high plain to the south of Stuttgart.

damp old streets; the other is in a new, well-ventilated building, and is situated in the western part of the city, in the centre of a manufacturing district. The third is also in a new building, and draws its pupils from a district which is not thickly populated, north of Stuttgart; they come from the so-called Prag and railroad village, both to the north of the city valley. The railroad village is inhabited only by employes of the railroad and postal departments. The children of this class are well fed and well taken care of. They live better in this locality than those belonging to better families residing in the middle of the city.

The pupils of the intermediate, high, and elementary schools come from all parts of the city. The orphan school comprises both children who reside in the house and day scholars.

The table which I insert gives the number of scholars examined, with boys and girls separate, the condition of the external canal and vicinity, the posterior fold, suppuration, calcification, and the percentage of each condition. (See Table I.)

Accordingly there were 5,905 children examined, 3,228 of which were boys, and 2,677 girls.

There was impacted cerumen, or simply wax in the canal, in boys, 11%; in girls, 15.1%.

We therefore see how frequently we find impacted wax, and more so in girls than in boys.

Impacted wax and wax in the canal, which means plugs closing the canal, and a tendency to the formation of a plug are, of course, put together.

Under impacted wax all cases are entered, where there was nothing to be seen of the drum-membrane, and under wax in canal, where at least a segment of the drum-membrane was obscured. In some cases of impacted wax there was but a small collection of wax, perhaps only temporary, but it always closed the lumen of the canal.

In this category are of course included cases with a fold, which likewise enter into the category of the posterior folds, the plug making a further diagnosis impossible. It

TABLE I.

NAME OF SCHOOL.	NUMBER OF		IMPACTED WAX.		WAX IN CANAL.		PER CENT. OF WAX, ETC.		POSTERIOR FOLD.		PER CENT. OF POST. FOLD.		SUPPURA-TION.		PERCENTAGE OF SEPARA-TION.		DEPOSIT OF CHALK.		PERCENT. OF DEPOSIT OF CHALK.		
	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	
Degerloch Public School	202	—	8	—	8	—	7.9	—	20	—	9.9	—	5	—	2.4	—	4	—	1.9	—	
" "	—	203	—	10	—	14	—	11.3	—	24	—	11.3	—	5	—	2.4	—	1	—	0.4	—
Elementary " "	327	—	20	—	15	—	10.7	—	39	—	11.9	—	5	—	1.5	—	4	—	1.2	—	
Orphan Asylum	219	—	7	—	8	—	6.8	—	31	—	14.1	—	1	—	0.4	—	3	—	1.3	—	
" "	—	66	—	11	—	3	—	12.2	—	4	—	6.0	—	2	—	3.0	—	—	—	—	—
Nicolas School, a blind asylum	22	—	1	—	2	—	13.5	—	—	—	—	—	—	—	—	—	—	—	—	—	
Pauline School, a protective school	43	—	5	—	3	—	18.6	—	7	—	16.2	—	—	—	—	—	3	—	6.9	—	
Eberhard School a public school	496	—	40	—	33	—	14.7	—	33	—	6.6	—	13	—	2.6	—	11	—	2.2	—	
Johannes Public School	327	—	32	—	16	—	14.6	—	36	—	11.0	—	11	—	3.3	—	—	—	—	—	
" "	—	313	—	41	—	10	—	16.2	—	37	—	11.5	—	19	—	6.0	—	3	—	0.9	—
Stöckach " "	350	—	22	—	14	—	10.2	—	39	—	11.1	—	—	—	—	—	—	—	—	—	
Common School, Intermediate Girls' Intermediate School	385	—	31	—	25	—	14.3	—	29	—	7.5	—	1	—	0.2	—	8	—	2.0	—	
Catherine High School, Girls Colleges, Old and Carl's	547	—	36	—	20	—	10.2	—	21	—	3.8	—	11	—	2.0	—	7	—	1.2	—	
High College	623	—	41	—	46	—	13.9	—	26	—	4.1	—	19	—	3.0	—	—	—	1.1	—	
" "	446	—	34	—	29	—	14.1	—	25	—	5.5	—	3	—	6.0	—	18	—	3.1	—	
" "	575	—	30	—	30	—	9.3	—	37	—	6.4	—	15	—	2.6	—	—	—	—	—	
" "	120	—	1	—	1	—	11.6	—	2	—	1.6	—	1	—	0.8	—	—	—	—	—	
Boys	3228	—	208	—	150	—	11.0	—	265	—	8.2	—	62	—	1.9	—	50	—	1.5	—	
Girls	—	2677	—	235	—	171	—	15.1	—	163	—	6.0	—	62	—	2.3	—	26	—	0.9	—

is evident that such complications often occur, and I have frequently had an opportunity of confirming the diagnosis, having treated the same child afterward in private practice.

The accumulations were generally on one side.

Their color differed from black to light yellow.

The yellow crumbling mass was frequently on both sides. Noises or diminution of hearing were not caused by the plug in this condition.

If we leave out of consideration the children of the public school and orphan asylum (since they had been treated for their ears before), it appears that the children of the better classes do not have impacted wax as often as those of the poorer classes, but in the comparison we must of course compare males with males, and females with females. In order to appreciate the astonishing difference between the number of boys and of girls who have impacted wax, I would remark that I think there are causes which tend to bring about such conditions, such as frequenting dusty places, etc.

Posterior fold was found: in the boys, 8.2%; in the girls, 6.0%.

A posterior fold was found often on one side, often on both; sometimes it seemed to have existed for a long time, but generally it appeared as if it were of recent origin. In the orphan asylum I found it very often; indeed, in 14.1% of the boys. When I examined the same institution the previous year, and with the exception of the oldest and youngest, the same children were present, I found it in only four cases.

A large number of these with the posterior fold (but not all) had defective hearing; some of them complained of noises.

Suppuration.—Under this head are included all cases in which pus was found in the ear, with the exception of those where it issued from the canal itself. The percentage of perforation of the drum-membrane was: in boys, 1.9%; in girls, 2.3 %.

Suppuration was found most frequent in the Johannes

school, and least of all in the Stöckach school, where it was present in only one girl.

According to the history given there were many children who had had running from the ear at some past period of life; for instance, in the Eberhard school, of the 1,105 children examined, there were 26 with actual suppuration, whereas 60 said they had had it at some time past. Only a few of these 60 had been under treatment. Consequently in a great majority of cases it had ceased of itself.

In this place I will mention that many had had some sort of ear disease, since, in the 1,105 children of the Eberhard school, 216 said they had had earache, but whether it was simply pain, without other complications, was impossible to determine.

Calcification was quite frequent, showing in the boys, 1.5%; in the girls, 0.9%.

Most of these declared that they had never had running from the ear, while but few acknowledged such to have been the case. The majority gave a history of having had noises in the ear at the time.

The deposits of chalk varied in size and shape.

It seems to me to be of great interest to know how far scarlet fever, measles, and diphtheria have been the cause of the various conditions noted in table I.

I have examined the children in the Eberhard school on this point, and have chosen them especially, since from these I could get better histories; they were all told the day before they were to be examined, to ask their parents about these diseases. It was consequently declared that in the 1,105 children, 479 had not had either of the above affections.

The remaining 626, or 56% of the whole, had had them in the following ratio:

Scarlet fever, 57.

Diphtheria, 20.

Measles, 352.

Scarlet fever and measles, 115.

Scarlet fever and diphtheria, 10.

Measles and diphtheria, 30.

Scarlet fever, measles, and diphtheria, 36.

Among those who had remained free from these diseases, 68 or 14.2% had either impacted wax or wax in the external canal; 25 or 5.2% had posterior folds, and 10 or 2.0% suppuration.

Of the 626 who had had them, were :

105 or 16.7% with wax.

26 or 4.1% with the fold.

16 or 2.5% with suppuration.

Therefore with those who had had these diseases, we find that there were 2.5% more who had wax, etc., 0.5% more with suppuration, and 1.1% less with the posterior fold than among those who had not had them.

Among the 1,105 of the Eberhard school children we find 353 who hear badly, and of these there were 191 or 30.5% who had suffered from the diseases under consideration.

Of the 479 who had remained free, we find 161 or 33.8% with defective hearing; therefore we find that among those with the diseases there were 3.5% less with defective hearing than among those who had remained free from them! (?)

In this place I will remark that I have found furuncles but seldom; eczema somewhat more frequently; polypi and foreign bodies only occasionally; in one instance a pearl bead; and one case where there was a closure of the external canal.

Anterior fold, great retraction of the drum-membrane, abnormal position of the handle of the malleus, isolate transparent places and cicatrices in the drum-membrane, were quite frequent, even in the youngest children, (compare table II).

Table II will be seen to present the percentage of wax, posterior fold, suppuration, and deposit of chalk according to the age of the patient.

That tables I and II do not agree in their results will be found in the fact that in table II there is no notation of cases over 18 years, nor under 6 years.

It is difficult to draw conclusions from table II, and we must therefore wait for further statistics.

TABLE II.

Age.	NUMBER OF CHILDREN.		IMPACTED WAX.		WAX IN CANAL.		PER CENT. OF IMPACTED WAX, ETC.		POSTERIOR FOLL.		PER CENT. OF POST. FOLL.		SUPPURA-TION.		PER CENT. OF SUPPURA-TION.		DEPOSIT OF CHALK.		PER CENT. OF DEPOSIT OF CHALK.	
	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.
Six years old .	56	48	4	3	1	5	8.9	16.6	4	4	7.1	8.3	1	—	1.7	—	—	—	—	—
Seven " .	234	310	14	30	12	30	11.1	19.2	28	19	11.5	6.1	4	8	1.7	2.5	3	2	1.2	0.6
Eight " .	608	396	41	28	32	27	11.9	13.8	82	27	13.5	6.8	6	11	0.9	2.7	4	2	0.6	0.5
Nine " .	445	405	21	28	31	20	11.6	11.8	31	37	6.9	9.1	11	12	2.4	2.9	6	3	1.3	0.7
Ten " .	456	428	30	37	15	33	9.7	16.3	22	25	4.8	5.8	10	6	2.1	1.4	11	2	2.4	0.4
Eleven " .	415	371	30	29	11	27	0.8	15.0	26	26	6.3	7.0	3	11	0.7	2.9	8	6	1.9	1.6
Twelve " .	372	369	23	44	17	18	10.7	16.7	27	13	7.2	3.5	8	10	2.1	2.7	9	7	2.4	1.8
Thirteen " .	397	332	26	32	20	11	11.5	12.9	33	11	8.3	3.3	17	4	4.2	1.0	8	4	2.0	1.2
Fourteen " .	97	10	5	2	7	—	12.3	20.0	9	—	9.2	—	1	—	1.0	—	1	—	1.0	—
Fifteen " .	60	3	2	—	2	—	6.6	—	1	—	1.6	—	—	—	—	—	—	—	—	—
Sixteen " .	41	1	6	1	1	—	19.0	100.0	1	—	2.4	—	—	—	—	—	—	—	—	—
Seventeen " .	37	—	5	—	1	—	16.2	—	1	—	2.7	—	1	—	—	—	—	—	—	—
Eighteen " .	7	—	1	—	—	—	14.0	—	—	—	—	—	—	—	—	—	—	—	—	—
Total . . .	3225	2673	208	234	150	171	—	—	265	162	—	—	62	62	—	—	50	26	—	—

We will now pass to the **condition of hearing**, which I furnish directly from my notes.

The normal ear must hear the whisper tests at 20-25 m., but rooms of these dimensions were not always at my disposal, and therefore in some of the schools the testing was imperfect. For the same reasons a comparison between the schools is impossible, nevertheless I record the results, school for school, as they give a picture of the great number of disturbances of hearing.

Degerloch School.

Examinations made in a room 11 metres long.

Among the 405 children of this school there were 76 under six years, and these I did not record, since their answers were not sufficiently positive.

Of those examined 164 were girls, 18 of whom heard at a distance less than 11 metres with both ears, and 7 with one ear. Together we have 25 in all or 15.1%.

There were 165 boys, and among them were 22 who did not hear at 11 metres with both ears, and 7 with one ear. Together 29 or 17.5%.

Elementary School.

Since I could not obtain a large room in this school I did not make the tests for the voice, but by a somewhat superficial examination with the watch I found quite a number who heard it badly. In this school I found a case of cleft palate, and in it hearing was very much reduced.

Orphan Asylum.

The examinations were made in a room 10 metres long, on the diagonal. Only children of the city present, and of these 66 were girls.

At a distance less than 10 metres :

		16 heard both ears, and		2 one, being 18	or 27.2 %
Of these less than 8 m.,	4	"	"	7	" " 11 or 16.6
" " 5 m.,	1	"	"	1	" " 3 %
" " 2 m.,	0	"	"	2	" " 3

There were 219 boys and they heard as follows :

	Less than 10 m., both ears 40, one ear 10, being together 22.8 %							
Of these	"	8 m.,	"	8,	"	8,	"	5.9
"	"	5 m.,	"	2,	"	3,	"	2.2
"	"	2 m.,	"	1,	"	3,	"	1.3

Asylum for the Blind.

Examination in a room 10 metres long.

Of those examined 22 were boys :

	Less than 10 m., both ears 4, one ear 1, together making 22.7 %							
Of these	"	8 m.,	"	1,	"	0,	"	4.5
"	"	5 m.,	"	0,	"	1,	"	4.5
"	"	2 m.,	"	0,	"	1,	"	4.5

Girls 13 in number :

Under 10 m., both ears 3, one ear 0, making 23.0 %							
"	8 m.,	"	0,	"	0,	"	0

Since good hearing is of the utmost importance for the blind, they naturally pay much attention to their ears.

Protectory.

The room was 19-20 metres long, and among the inmates were 43 boys who heard :

	Less than	18 m., both	ears 14,	one ear 9,	being 53.4 %
Of these	"	15 m.,	" 2,	" 6,	" 18.6
"	"	12 m.,	" 1,	" 2,	" 6.9
"	"	10 m.,	" 1,	" 2,	" 6.9
"	"	8 m.,	" 1,	" 0,	" 2.3
"	"	2 m.,	" 1,	" 0,	" 2.3

The girls numbered 19 as follows :

	Less than 18 <i>m.</i> , both ears 10, one ear 2, making 63.1 %						
Of these	"	15 <i>m.</i> ,	"	3,	"	4,	" 36.8
"	"	12 <i>m.</i> ,	"	0,	"	2,	" 10.5
"	"	10 <i>m.</i> ,	"	0,	"	0,	

The inmates of this institution seem to be kept clean and well taken care of.

Eberhard Public School.

Examination-room 7 metres long, and in a very noisy street.

There were present 623 girls; hearing as follows:

	Less than 7 m., both ears	171,	one ear	32,	making	32.6 %
Of these	" 5 m., "	54,	" 22,	" 12.1		
"	" 2 m., "	14,	" 9,	" 3.6		

and 485 boys showing:

	Less than 7 m., both ears	87,	one ear	56,	making	29.4 %
Of these	" 5 m., "	28,	" 27,	" 11.3		
"	" 9 m., "	9,	" 13,	" 4.5		

Johannes Public School.

Examination-room 9 metres long and very quiet.

There were 313 girls as follows:

	Less than 9 m., both ears	36,	one ear	12,	being	15.3 %
Of these	" 5 m., "	9,	" 5,	" 4.4		
"	" 2 m., "	5,	" 2,	" 2.2		

Boys numbering 327 as follows:

	Less than 9 m., both ears	100,	one ear	9,	being	33.3 %
Of these	" 7 m., "	10,	" 7,	" 5.1		
"	" 5 m., "	6,	" 3,	" 2.7		
"	" 2 m., "	3,	" 5,	" 2.4		

In this instance the difference between the boys and girls is conspicuously in favor of the latter.

Stöckach Public School.

Examination-room quiet and 14 metres long in its diagonal.

The boys numbered 350 as follows:

	Less than 14 m., both ears	53,	one ear	9,	being	17.7 %
Of these	" 12 m., "	17,	" 5,	" 6.2		
"	" 10 m., "	12,	" 2,	" 4.0		
"	" 7 m., "	9,	" 2,	" 3.1		
"	" 5 m., "	5,	" 1,	" 1.7		
"	" 2 m., "	2,	" 2,	" 1.1		

Girls 385 :

Less than 14 m., both ears 59, one ear 2, making 15.8 %						
Of these	"	12 m.,	"	13,	"	2, " 3.8
"	"	10 m.,	"	10,	"	2, " 3.1
"	"	8 m.,	"	7,	"	1, " 2.0
"	"	5 m.,	"	3,	"	0, " 0.7
"	"	2 m.,	"	1,	"	0, " 0.2

Common School. Intermediate.

Examination-room, 22 m. in its diagonal, and 547 boys present.

Since in this school and those to follow I found rooms large enough for the purpose, I give the results according to the age of the patients.

There were 93 eight years of age, giving :

Less than 20 m., both ears 15, one ear 8, making 24.7 %						
Of these	"	18 m.,	"	4,	"	6, " 10.7
"	"	15 m.,	"	3,	"	1, " 4.3
"	"	12 m.,	"	1,	"	0, " 1.0

Nine years of age, 79 :

Less than 20 m., both ears 7, one ear 3, making 24.7 %						
Of these	"	18 m.,	"	2,	"	2, " 5.0
"	"	15 m.,	"	1,	"	2, " 3.7
"	"	12 m.,	"	0,	"	3, " 3.7
"	"	10 m.,	"	0,	"	2, " 2.5
"	"	8 m.,	"	0,	"	2, " 2.5
"	"	5 m.,	"	0,	"	1, " 1.2

Ten years old, 93 :

Less than 20 m., both ears 19, one ear 8, making 29.0 %						
Of these	"	18 m.,	"	8,	"	3, " 11.8
"	"	15 m.,	"	3,	"	3, " 6.4
"	"	12 m.,	"	1,	"	3, " 4.3
"	"	10 m.,	"	0,	"	2, " 2.1
"	"	5 m.,	"	0,	"	2, " 2.1
"	"	2 m.,	"	0,	"	1, " 1.0

Eleven years old, 90 boys :

Less than 20 m., both ears 33, one ear 6, making 43.3 %						
Of these	"	18 m.,	"	18,	"	6, " 26.6
"	"	15 m.,	"	4,	"	2, " 6.6
"	"	12 m.,	"	3,	"	1, " 4.4
"	"	10 m.,	"	3,	"	1, " 4.4
"	"	8 m.,	"	1,	"	3, " 4.4
"	"	5 m.,	"	1,	"	2, " 3.3
"	"	2 m.,	"	1,	"	1, " 2.2

Twelve years old, 79 boys :

Less than 20 m., both ears 33, one ear 9, making 53.1 %					
Of these	"	18 m.,	"	21,	" 13, " 43.0
"	"	15 m.,	"	7,	" 5, " 15.1
"	"	12 m.,	"	5,	" 4, " 11.3
"	"	10 m.,	"	3,	" 4, " 8.8
"	"	8 m.,	"	2,	" 3, " 6.3
"	"	5 m.,	"	1,	" 1, " 2.5
"	"	2 m.,	"	1,	" 1, " 2.5

Thirteen years old, 111 boys :

Less than 20 m., both ears 65, one ear 17, making 73.9 %					
Of these	"	18 m.,	"	43,	" 17, " 54.0
"	"	15 m.,	"	21,	" 12, " 29.9
"	"	12 m.,	"	7,	" 8, " 13.5
"	"	10 m.,	"	3,	" 10, " 12.6
"	"	8 m.,	"	3,	" 5, " 7.2
"	"	5 m.,	"	2,	" 4, " 5.4
"	"	2 m.,	"	1,	" 4, " 4.5

Female Intermediate School.

I examined 623 girls from this school in a room whose diagonal was 22 metres long.

There were 100, seven years old, hearing as follows :

Less than 20 m., both ears 30, one ear 7, making 37.0 %					
Of these	"	18 m.,	"	17,	" 5, " 22.0
"	"	15 m.,	"	9,	" 5, " 14.0
"	"	12 m.,	"	5,	" 2, " 7.0
"	"	10 m.,	"	2,	" 4, " 6.0
"	"	8 m.,	"	1,	" 2, " 3.0
"	"	7 m.,	"	1,	" 2, " 3.0
"	"	5 m.,	"	1,	" 2, " 3.0
"	"	2 m.,	"	1,	" 1, " 2.0

Of eight years old, 85, as follows :

Less than 20 m., both ears 32, one ear 5, making 43.5 %					
Of these	"	18 m.,	"	25,	" 4, " 34.1
"	"	15 m.,	"	14,	" 4, " 21.1
"	"	12 m.,	"	4,	" 6, " 11.7
"	"	10 m.,	"	3,	" 3, " 7.0
"	"	8 m.,	"	2,	" 3, " 5.8
"	"	7 m.,	"	2,	" 2, " 4.7
"	"	5 m.,	"	2,	" 1, " 3.5
"	"	2 m.,	"	2,	" 0, " 2.3

Of nine years old, 89:

Less than 20 m., both ears 37, one ear 7, making 49.3 %						
Of these	"	18 m.,	"	32,	"	5, " 41.5
"	"	15 m.,	"	19,	"	10, " 32.5
"	"	12 m.,	"	15,	"	4, " 21.3
"	"	10 m.,	"	10,	"	5, " 16.8
"	"	8 m.,	"	8,	"	3, " 12.3
"	"	7 m.,	"	7,	"	2, " 10.1
"	"	5 m.,	"	5,	"	3, " 8.9
"	"	2 m.,	"	3,	"	3, " 6.7

Of ten years old, 83, as follows:

Less than 20 m., both ears 49, one ear 3, making 62.6 %						
Of these	"	18 m.,	"	44,	"	3, " 56.6
"	"	15 m.,	"	30,	"	11, " 49.3
"	"	12 m.,	"	22,	"	4, " 31.3
"	"	10 m.,	"	12,	"	7, " 22.8
"	"	8 m.,	"	4,	"	3, " 8.4
"	"	7 m.,	"	3,	"	1, " 4.8
"	"	5 m.,	"	1,	"	1, " 2.4

Of eleven years old, 90, as follows:

Less than 20 m., both ears 56, one ear 4, making 66.6 %						
Of these	"	18 m.,	"	46,	"	7, " 58.8
"	"	15 m.,	"	26,	"	6, " 35.5
"	"	12 m.,	"	14,	"	8, " 24.4
"	"	10 m.,	"	9,	"	6, " 10.6
"	"	8 m.,	"	5,	"	4, " 10.0
"	"	7 m.,	"	4,	"	2, " 6.6
"	"	5 m.,	"	1,	"	4, " 5.5
"	"	2 m.,	"	0,	"	2, " 2.2

Twelve years old, 86, as follows:

Less than 20 m., both ears 59, one ear 11, making 81.3 %						
Of these	"	18 m.,	"	51,	"	6, " 86.2
"	"	15 m.,	"	40,	"	7, " 54.6
"	"	12 m.,	"	34,	"	3, " 43.0
"	"	10 m.,	"	21,	"	7, " 32.5
"	"	8 m.,	"	12,	"	2, " 16.5
"	"	5 m.,	"	5,	"	2, " 8.1
"	"	2 m.,	"	2,	"	1, " 3.4

Thirteen years old, 80:

Less than 20 m., both ears 71, one ear 3, making 92.5 %						
Of these	"	18 m.,	"	60,	"	7, " 83.7
"	"	15 m.,	"	57,	"	3, " 67.5
"	"	12 m.,	"	44,	"	7, " 63.7
"	"	10 m.,	"	33,	"	8, " 51.2
"	"	8 m.,	"	16,	"	8, " 30.0
"	"	7 m.,	"	14,	"	4, " 22.5
"	"	5 m.,	"	2,	"	5, " 8.7
"	"	2 m.,	"	0,	"	3, " 3.7

It would seem that the pupils of this school heard badly, but perhaps it is from the fact that I spoke somewhat low in the examinations. I think this the more probable since this was the first school I examined in a room which was really large enough, and in order not to speak too loud, I used too moderate a whisper, and thereby fell into one error while I was trying to avoid another.

High School for Girls.

Examinations made in a room 25 metres long; 446 girls were tested.

There were 21 seven years old who heard as follows :

Less than 20 m., both ears 4, one ear 3, being 33.3 %						
Of these	"	18 m.,	"	2,	"	0, "
"	"	15 m.,	"	1,	"	0, "

Eight years old, 51, as follows :

Less than 20 m., both ears 9, one ear 6, making 29.4 %						
Of these	"	18 m.,	"	4,	"	4, "
"	"	15 m.,	"	4,	"	3, "
"	"	12 m.,	"	4,	"	0, "
"	"	10 m.,	"	3,	"	0, "
"	"	8 m.,	"	2,	"	0, "
"	"	5 m.,	"	0,	"	2, "

Nine years of age, 54, as follows :

Less than 20 m., both ears 12, one ear 8, being 37.0 %						
Of these	"	18 m.,	"	9,	"	4, "
"	"	15 m.,	"	4,	"	3, "
"	"	12 m.,	"	0,	"	6, "
"	"	10 m.,	"	0,	"	2, "
"	"	8 m.,	"	0,	"	2, "
"	"	5 m.,	"	0,	"	2, "

Ten years of age, 78, as follows :

Less than 20 m., both ears 12, one ear 3, making 19.2 %						
Of these	"	18 m.,	"	8,	"	4, "
"	"	15 m.,	"	6,	"	3, "
"	"	12 m.,	"	4,	"	2, "
"	"	10 m.,	"	1,	"	2, "
"	"	5 m.,	"	0,	"	1, "
"	"	2 m.,	"	0,	"	1, "

Eleven years old, 83, as follows :

Less than 20 m., both ears 6, one ear 3, making 10.8 %						
Of these	"	18 m.,	"	5,	"	3, " 9.6
"	"	15 m.,	"	3,	"	3, " 7.2
"	"	12 m.,	"	1,	"	2, " 3.6
"	"	10 m.,	"	0,	"	1, " 1.2

Twelve years old, 71, as follows :

Less than 20 m., both ears 21, one ear 10, making 43.6 %						
Of these	"	18 m.,	"	14,	"	6, " 28.1
"	"	15 m.,	"	8,	"	7, " 21.1
"	"	12 m.,	"	5,	"	2, " 9.8
"	"	10 m.,	"	5,	"	1, " 8.4
"	"	8 m.,	"	2,	"	2, " 5.6
"	"	5 m.,	"	0,	"	1, " 1.4
"	"	2 m.,	"	0,	"	1, " 1.4

Thirteen years old, 88, as follows :

Less than 20 m., both ears 23, one ear 9, making 36.3 %						
Of these	"	18 m.,	"	16,	"	9, " 28.4
"	"	15 m.,	"	6,	"	7, " 14.7
"	"	12 m.,	"	2,	"	5, " 7.9
"	"	10 m.,	"	0,	"	2, " 2.2

Carl's College.

Examined in a room about 20 metres long, but in a noisy street. 368 boys were tested.

Nine years old, 72 :

Less than 20 m., both ears 32, one ear 2, making 47.2 %						
Of these	"	18 m.,	"	6,	"	4, " 13.8
"	"	15 m.,	"	0,	"	1, " 1.3

Ten years old, 59 :

Less than 20 m., both ears 26, one ear 5, making 52.5 %						
Of these	"	18 m.,	"	9,	"	4, " 22.0
"	"	15 m.,	"	2,	"	3, " 8.4
"	"	12 m.,	"	0,	"	1, " 1.6

Eleven years old, 62, as follows :

Less than 20 m., both ears 22, one ear 3, making 40.3 %						
Of these	"	18 m.,	"	11,	"	1, " 19.3
"	"	15 m.,	"	1,	"	3, " 6.4
"	"	12 m.,	"	1,	"	1, " 3.1
"	"	10 m.,	"	1,	"	1, " 3.1

Twelve years old, 54, as follows:

Less than 20 m., both ears 34, one ear 5, making 72.2 %						
Of these	"	18 m.,	"	14,	"	48.1
"	"	15 m.,	"	5,	"	20.3
"	"	12 m.,	"	2,	"	7.5

Thirteen years old, 57, as follows:

Less than 20 m., both ears 32, one ear 10, making 73.6 %						
Of these	"	18 m.,	"	22,	"	54.3
"	"	15 m.,	"	11,	"	28.0
"	"	12 m.,	"	6,	"	14.0
"	"	10 m.,	"	1,	"	1.7
"	"	2 m.,	"	1,	"	1.7

Fourteen years old, 45, as follows:

Less than 20 m., both ears 28, one ear 6, making 75.5 %						
Of these	"	18 m.,	"	21,	"	60.0
"	"	15 m.,	"	14,	"	37.7
"	"	12 m.,	"	3,	"	13.3
"	"	10 m.,	"	0,	"	4.4
"	"	8 m.,	"	0,	"	2.2

Fifteen years old, 21, as follows:

Less than 20 m., both ears 16, one ear 0, making 76.1 %						
Of these	"	18 m.,	"	12,	"	61.9
"	"	15 m.,	"	5,	"	33.3
"	"	12 m.,	"	1,	"	13.3

The so-called Old College.

Examined in a room about 18 metres long in its diagonal; 204 boys present.

The number is too small to have much value, and I therefore give the results all together, and not according to age.

Less than 18 m., both ears 38, one ear 19, making 27.9 %						
Of these	"	15 m.,	"	6,	"	5.7
"	"	12 m.,	"	5,	"	4.9
"	"	10 m.,	"	5,	"	3.4
"	"	8 m.,	"	5,	"	3.4
"	"	5 m.,	"	4,	"	2.9
"	"	2 m.,	"	2,	"	2.4

It is remarkable that I found decidedly less boys in the old college who heard badly than in the Carl's College. The reason I do not know, but probably it came from a better general hygienic condition of the former school.

High College.

Examinations made in a room 18 metres long; 120 boys examined as follows:

Less than 18 m., both ears 56, one ear 11, making 55.8 %							
Of these	"	15 m.,	"	6,	"	8,	" 12.7
"	"	12 m.,	"	1,	"	1,	" 1.6
"	"	10 m.,	"	1,	"	1,	" 1.6
"	"	8 m.,	"	0,	"	1,	" 0.8
"	"	5 m.,	"	0,	"	1,	" 0.8

The relative infrequency of decided defect of hearing in the High College is interesting. In one scholar who heard only at 5 metres (3 metres) with one ear, there was an acute suppurative inflammation of the middle ear, with perforation. This has healed in the meantime, so that at present there is only one boy who hears with both ears at 10 metres (8 metres) to be recorded.

The reason why we find here such a small number who heard badly may be perhaps found in that those who have a chronic bad hearing do not pursue their studies into the higher classes. Nevertheless, we must have further statistics on this point, since the number of my examinations has not been sufficiently large.

Recapitulating the results of all of the foregoing examinations, we see that in quiet localities the whisper is heard at 20-25 metres, simple and short words being chosen. Nevertheless, there were a great many who could not hear at the 20-25 metres; but, at the same time, the condition of their ears did not put them to any inconvenience. It was only when we came to 12-15 metres that they commenced to complain of defective hearing. For this reason I have recorded those children who hear at less than 15 metres as hearing badly. Even some of those who heard very badly were astonished to find that they did not have normal hear-

ing. If they did not understand what people said to them, they accused the people of speaking indistinctly.

But few of the children had ever been under treatment for their ears.

On account of the small size of many of the rooms I could not determine the condition of some with certainty, but when the room was small, all who could not hear the whisper over its entire area were recorded as hearing badly.

In the Eberhard school there were more with defective hearing than in any other; and even if we make allowance for the noise in the vicinity, over 30% of those present heard badly with one or with both ears.

The other two public schools gave better results, and especially the Stöckach. This probably was due to better dwellings, and also to better conditions in the schools themselves.

The well-ventilated condition of the dwellings of the pupils of the Degerloch public school may also account for their good condition of hearing. The children of both the rich and the poor attend this school.

By inspection of the different results we find that they are better in those schools which are frequented by the better classes, than in those attended by the poorer. If we compare the results of the different ages we find that the younger children hear better than the older, and the frequency of defect of hearing increases with the age of the children (compare, for instance, the intermediate school). I will not discuss these subjects, however, since further examinations seem to be required, but will remark that v. Reichard came to the same conclusions as we have already noted. The results would have been of far greater value had the examinations been made with a more exact instrument for measuring the power of hearing, nevertheless they are important enough to allow us to say that *the ear requires much more attention on the part of physicians and authorities, especially those connected with schools, and also on the part of parents,—than has heretofore been conferred upon it.*

Practitioners of medicine would pay more attention to the ear and its diseases if they were more familiar with the science of otology. It is, however, a well-known fact that they know but little of this subject. Such must be the case, since in many universities it is not taught, and even when it is, students pay too little attention to it, since they are not required to be familiar with it at examinations. It should be required for graduation that the candidate should have some knowledge of the ear, and were this the case, it would soon bring about a different state of affairs in our physicians, and force them to be more familiar with the diseases of the ear and their proper treatment.

It is also of importance for governments to awaken a livelier interest in otology among its surgeons, since there are many patients whose health and usefulness suffer from ear affections, and indeed many who lose their lives, simply by want of knowledge on the part of their doctor.

The reports of health bureaus of the Prussian and Wurttemberg armies for 1874-78 show that during those four years there were removed on account of ear diseases:—

Died	23
Rendered unable to perform duty	1701
Partial invalids	33
Complete invalids	126
Total,	1883

The number of such as are unable to serve in the army on account of their ears must also be large. Then again, many people lose their positions from the condition of their ears, and many of them suffer this loss from a want of proper treatment.

In the schools the ear ought to receive more attention, since good hearing is of the greatest importance to a scholar. Children who hear badly find much more difficulty in following the teacher; they must therefore exert themselves more, and become tired much quicker. Consequently, they lose their power of attention, particularly when they are absent-minded and not very ambitious.

The difficulty under which such school children labor should not be forgotten by their teachers, since they must have special pains taken with them. Unfortunately some ear affections escape observation, and especially where they are not well pronounced. The sufferers are often misjudged and considered inattentive, and so treated, while they are simply hard of hearing. So thoroughly convinced am I of this that I have always insisted *that every inattentive child should have his ears examined.*

Of course it would be much better if *every school child underwent such an examination once or twice every year.*¹

It is not necessary that such examinations should be made by a doctor, since the teachers could do it, but of course not so well as a physician.

It does not require much time or trouble, certainly not more than one hour for each class.

The test could be made in the school-room itself if there is no other room convenient; they are generally of sufficient dimensions.

The teacher could place the pupil in one corner of the room, then retire to the other himself, and test each ear separately by whispering.

He should cause the words and sentences used to be repeated by the pupil, and could thus easily find out which of them are hard of hearing. He could seat them accordingly.

Such examinations would have another advantage, viz.: they would call the attention of parents to the condition of their children, and allow them to handle them as they require. This, also, cannot be insisted upon too strongly. It often happens that when a child says "what?" it is considered naughty and reprimanded, without it ever occurring to the parents that the child does not hear well. Many an injustice would be thus avoided, and, moreover, it would cause more children to be put under treatment when it is not too late to benefit them.

Independent of the fact that early treatment generally gives good results in ear diseases, there are many very trivial things which cause a person to hear badly, as wax,

¹ See also Berzold, *Aeratisches Intelligenzblatt*, 1881, No. 26.

etc. This can often be removed in a few minutes by one who understands it, whereas otherwise they would annoy the person concerned for years.

I believe that in the great majority of cases the children whom I examined could be much benefited by proper treatment, and many of them could be entirely relieved in a few minutes. Probably the great majority will never be submitted to proper treatment, or at least not before years, when the disease will have caused changes which can then be but little benefited.

Many of the children will be neglected by their parents even after they have become informed of their condition, simply on account of the cost of treatment. If, however, the authorities would engage a proper surgeon who would be responsible for the proper health of all such institutions, they would be properly treated. It should be the duty of such a surgeon to examine the ears of every child whom the teacher finds inattentive, and, when necessary, to give the proper advice. I believe that such regulations would be of great advantage for the schools and also for the scholars.

A proper education in aural surgery on the part of physicians and regular examinations of the ear would be of great importance to the community, and would also assist in bringing otology into a prominence which it certainly deserves, and of which it is unfortunately still deprived at the present day.

Stuttgart, Jan. 1, 1882.

REVIEWS.

I.

Lehrbuch der Ohrenheilkunde mit Einschluss der Anatomie des Ohres. Von Dr. A. v. Trölsch, a. o. Professor der Medicin an der Universität Würzburg. Siebente verbesserte und vermehrte Auflage. Mit 24 Holzschnitten im Text. Leipzig: F. C. Vogel, 1881.

Reviewed by A. HARTMANN, Berlin.

(Translated by Isidor Furst, New York.)

In complying with the request of the editors of these ARCHIVES, and giving a review of the recently issued new edition of the text-book of the esteemed author, I do so with the greatest pleasure, believing that thereby a desideratum hitherto existing in our journal will be met. This journal, formerly only the lesser part of the combined ARCHIVES OF OPHTHALMOLOGY AND OTOTOLOGY, has developed into an independent organ, with the object of furnishing a complete, objectively-drawn image of the continuous development of otology. A review of a new edition of the text-book of v. Trölsch, could, therefore, not be omitted.

The regularly issued new editions of this excellent treatise may be considered as mile-stones on the progressive road of otiatrics. The author has always understood how to incorporate into his book all newly acquired experience, and to perpetually complete it in this manner.¹ To be sure, we

¹ We feel, however, constrained to point out that v. Trölsch makes his supplements from the *Archiv für Ohrenheilkunde* only, so that the contributions which have appeared in other journals are only cited according to the extracts contained in that *Archiv*.

must emphasize the fact that *the appearance of this seventh edition is not identical with the present stage of development of our specialty*, because, as v. Tröltsch remarks in the preface, the manuscript was finished nearly a year before the appearance of the book, and thus little could be utilized of what was published later. For instance, the chapter on "Nervous Deafness" could have gained a material modification and more decided diction by the utilization of the contributions furnished during 1880 respecting the pathological alterations in the labyrinth; of Politzer's articles on otitis labyrinthica, and the condition in syphilis; of those of Moos on changes in the labyrinth in hemorrhagic pachymeningitis; on nerve atrophy in the first cochlear convolution by Moos and Steinbrügge.

The reviewer believes he may omit a more detailed discussion of v. Tröltsch's book, as its contents are too well-known to require a close analysis. The alterations found in the new edition, as compared with the old, are, on the whole, not great. The chapter on the importance of diseases of the ear and on the position of otology in science, which has already appeared in the *Archiv für Ohrenheilkunde*, forms the introduction. Three new anatomical illustrations, borrowed from the author's "Krankheiten des Ohres im Kindesalter," have been added to the text.

The growth of the author's book from small beginnings until it now comprises 664 pages corresponds to the ever-increasing development of otology. It appears to us questionable whether the statement contained in the preface to the first edition, that all extensive anatomical discussions have been omitted, is still true for the present edition. We point, for instance, to the sections referring to the height of the auricle in embryos, on the growth of the membrana tympani in the foetus, contained in the first chapters. The absence of the hole of Rivini is very fully discussed; while, on the other hand, the anatomy of the labyrinth is treated very briefly, and the reader referred, strange to say, in just this most difficult part of the anatomy of the ear, to the manuals. Particularly appropriate, and corresponding to a requirement in practice, appears to be

the full description of the anatomical relations of the external auditory meatus to its surroundings.

We need not emphasize the masterly representation of the morbid processes in the outer and middle ears in v. Trölsch's text-book. The respective chapters are elaborated with the greatest care, and are based on the most ample practical experience. Among the affections of the external meatus, perhaps the osseous occlusion, brought about by an acute inflammatory process, as described by Moos, might have been mentioned.

As regards the classification of the affections of the middle ear, we encounter in v. Trölsch's book the same difficulties which are likewise found in the other text-books of otology. The author divides acute inflammation of the middle ear into an acute *simple* catarrh of the ear, and an acute *purulent* catarrh, or acute otitis media—two affections differing not in their nature, but only in the intensity of their occurrence. On the other hand, in the long chapter, "Chronic Simple Catarrh of the Ear," the ("sit venia verbo") dry catarrh, the sclerosis of the mucosa of the drum cavity, also the accumulations of exudations, the processes of adhesion, and the affections of the tubes, are described together. The exudative catarrh of the ear of children, which we only know from *post-mortem* appearances, is perhaps treated rather too fully (pp. 21).

In the sections on the ear-trumpet and on the air douche, several more positive supports would have been yielded by mentioning the results of the manometric determination of the patency of the Eustachian tube and the power of resistance of the soft palate.

Inasmuch as the author of a book, in our opinion, cannot care to receive in its review nothing but flattering terms of praise, we have undertaken to point out at least a few facts that struck us on reading the book, and which we believed could be taken into consideration in a subsequent edition. We hope that our remarks will be accepted as being to the point and not as carping criticism; the latter would be out of place with a book which will retain a lasting position in the history of our specialty, and the merits of which in the spread of otology must remain unquestioned.

II.

Imperfect Hearing and the Hygiene of the Ear, including Nervous Symptoms, etc. By Laurence Turnbull, M.D. Third edition, with illustrations. Philadelphia: J. B. Lippincott & Co., 1881.

Reviewed by A. HARTMANN, Berlin.

The author, who has done much for the spread of otology in the United States, in the introduction to his monograph which has appeared in its third edition, gives a brief synopsis of the progress of otology.

In the *first chapter*, the limits of perception of musical tones are discussed according to Blake's and his own experiments. Two of the persons tested by the author perceived tones of 60,000 vibrations, a great number heard those of 50,000 vibrations; the extreme limit of tones which were always recognized by those with normal hearing were those of 25,000 vibrations. By practice the ear can be educated to perceive higher tones which were formerly inaudible.

In the *second chapter*, the author submits his views on tinnitus and aural vertigo, together with their diagnosis and treatment, with the addition of a considerable number of case reports. Attention should be called to the fact that Turnbull places a particular value on a good preparation of hydrobromic acid. While he formerly had no result from this remedy, he succeeded after he provided himself with a good sample, on the advice of Woakes. The mode of preparation is given.

In the *third chapter*, the importance of the treatment of affections of the naso-pharyngeal space is discussed. As regards adenoid proliferations, the author did not succeed in seeing characteristic cases during his sojourn at Vienna, Paris, and London, and therefore considers them very rare; according to the author, hypertrophies of the tonsils are by many designated as adenoid proliferations.

In the *further chapters*, Turnbull expresses his opinions on artificial perforation of the membrana tympani, on the mastoid region and its diseases, on the hygiene of the auditory

apparatus, and illustrates his explanations with many instances from his practice. Of special interest to us were the author's communications respecting deaf-mute instruction in America (chap. VII), and the discussion of the favorable results obtained in some institutions.

The *last chapter* contains a comparison between the audiphone, dentaphone, and the various forms of ear-tubes. Turnbull emphasizes that a great number of patients coming to him for the purpose of trying the various instruments for the amelioration of hearing, were so far improved by the treatment of the causative affection that they wished for no further trial of the instruments.

Any one into whose hands the author's book may come will find it pleasant reading. We express our obligation to him for his untiring efforts to establish the importance of otology, and to make it the common property of the profession.

III.

Der Chronische Nasen- und Rachencatarrh. Eine klinische Studie von Dr. Max Bresgen in Frankfurt a. M.
Wien and Leipzig: Urban & Schwarzenberg, 1881.

Reviewed by A. HARTMANN, Berlin.

In the present monograph, the author gives a pretty thorough description of chronic catarrh of the nose and pharynx, especially in relation to etiology, symptoms, and course. To characterize at once the impression made upon us by the work, it seems to us that the personality of the author is somewhat too prominent; he expresses himself very positively as to his own experience, and at the same time lets the experience of others appear in an unfavorable light. Whether he will thus succeed in convincing the reader that his is the best and most correct must remain an open question; to us it does not seem so. At any rate, Bresgen would have attained his object in a better manner if he had presented more positive facts, and had stated whether and how he had tested the experience

reported by others, instead of merely asserting: this and that I did not find useful, I dispute, failed with me, etc.

It must produce a somewhat startling impression when the author, for instance, expresses himself respecting Zaufal's funnels, that he cannot recommend them at all; and that he warns every one not to purchase them, after the utility of these funnels has been acknowledged by many reliable observers. A similar unfavorable opinion is advanced by Bresgen on Voltolini's palate-hook, which likewise is employed by many practitioners with advantage.

As regards the etiology of chronic nasal catarrh, it appears to the author, in harmony with other observers, indubitable that it may arise from the acute catarrh by frequent relapses. In the catarrh of children, which is chronic from its inception, Bresgen has always found scrofulosis as the basis. Bresgen disputes emphatically that syphilis is one of the predisposing causes of chronic nasal catarrh. "I maintain rather that syphilis localizes itself only in noses already in a catarrhal state." The habitual use of snuff is looked upon by Bresgen as decidedly the most important etiological factor of chronic nasal catarrh.

Bresgen does not think it appropriate to distinguish different forms of pharyngeal catarrh, but that it is more correct to speak of a single chronic pharyngeal catarrh only. He has never yet seen a chronic pharyngeal catarrh without the mucous membrane of the lower pharyngeal section being more or less strongly granulated. The pathological condition he believes to be congenital, and the disease inherited. The hereditary disposition is the more intense, the more pronounced and the more numerous the granulations on the pharyngeal mucosa are found.

In the section, "Symptoms, condition, and course of chronic nasal catarrh," ozæna is discussed in full detail. It strikes us that the author here does not sufficiently separate the simple chronic catarrh, blennorrhœa, and ozæna in the sense of Michel, Zaufal, Gottstein, and others, which fact may explain why he believes not to harmonize with the views of other writers. As regards Störk's so-called chronic blennorrhœa of the mucous membrane of the nose, larynx,

and bronchi, it should hardly be interpreted as an independent disease. The material difference which is said to exist between ozæna and Störk's disease—the ever-present intense implication of the larynx and trachea in the latter—does not appear to the reviewer to be convincing, because we find frequently enough also in ozæna an implication of the larynx and trachea.

The therapeutics which Bresgen employs in chronic nasal catarrh consist in the application of the nasal douche with the piston syringe; the usual injections are thrown in lukewarm. Especially recommended are insufflations of powders composed of silver nitrate: 0.05–0.1 gramm. in starch, grammes 10.0. Bresgen believes this treatment with silver nitrate insufflations to be also in ozæna far more agreeable to the patient than Gottstein's nasal tamponade.

In the treatment of pharyngeal catarrh, Bresgen rejects brushing with lunar caustic solutions, inhalations, gargles, and the silver nitrate stick. In the main, Bresgen's treatment consists in the galvano-caustic destruction of the granulations of the pharyngeal mucosa. Besides, Bresgen states, in connection with the discussion of hyperæsthesia of the pharyngeal mucous membrane, that the latter can be best overcome by the treatment of the chronic pharyngeal catarrh. He obtained the quickest result by brushing with iodized glycerin: *iodi puri*, 0.5–1.0.gramme; *potassii iodidi*, 2.5–5.0 grammes; *glycerini*, 25.0 grammes.

IV.

Die Krankheiten des Ohres und deren Behandlung.

By Dr. Arthur Hartmann. Kassel, 1881. 210 pages, with 34 wood-cuts. (Price 5 mark.)

Reviewed by G. BRUNNER, Zurich.

Although there is certainly no lack in German literature of text-books of otology, Hartmann's work really supplies a want, for (since 1866) no second edition has appeared of Moos's "*Klinik der Ohrenkrankheiten*," and the compen-

dium of Tröltsch in Billroth and Pitha's "Chirurgie" is in many respects rather too brief. On the other hand, the text-books of Tröltsch, Gruber, Politzer, Urbantschitsch are too extensive for the beginner and confuse him frequently by the many details; the price is also correspondingly much higher. In regard to the general arrangement, I can only express myself in praise. Hartmann obviously has understood to separate the essential from the unimportant; the book also affords pleasant reading, and the get-up is first-class. The anatomy is restricted to what is most necessary. A brief historical synopsis and three chapters on general diagnosis, symptomatology, and therapeutics, have been put before the special part, for which arrangement the beginner will be grateful. The other seven chapters treat of special pathology and therapeutics with a completeness and detail fully sufficient for a compendium.

Although the reviewer holds that it would be conducive to that unanimity of opinion which is still lacking on many, especially therapeutical points, if such treatises of the entire specialty were thoroughly discussed by a great number of confrères on the basis of their personal experience, he must here confine himself to a few remarks, as such a detailed review would far exceed the room assigned me.

To the disputed points belong, among others, the important primary treatment of acute otitis media, in regard to which I do not quite coincide with Hartmann. Namely, when he says (p. 114) that the general principle, that the use of cold limits inflammation and that heat increases it, cannot be applied to the ear, and that the condition of the patient would rather be made worse by the cold acting directly on the ear, I am constrained to contradict him on the strength of many years' experience. I maintain that the correctly applied ice-bag, conjoined with rest in bed and careful regimen, is the most effectual means in our anæmic times which are unfavorable to the abstraction of blood, and I know of hardly any disease in which strict antiphlogosis ab initio proves itself as effective as in this. The inflow of cold water into the ear which is feared by Hartmann can be prevented by any careful practitioner; nor will iced

compresses be laid upon the ear, but a completely closed ice-bag which should not be too large, and the effects of which can be moderated to any degree by an interposed dry compress of variable thickness. Hartmann combines heat and cold in such a manner as to have warm infusions poured into the meatus or warm sponges (!) laid upon the ear; while in front of and below the ear cold applications or a small ice-bag are to be applied. To be sure, by the latter the injurious influence, *per se*, of the heat is more or less neutralized, but I should think it more rational and better to entirely omit the heat, which favors hyperæmia and formation of pus.¹ Moreover, I should have wished that Hartmann would have laid greater stress upon the utility of rest in bed, not only "in purulent inflammation with fever."

I was well pleased with the chapter on foreign bodies in the ear, in which the syringe is praised as the sovereign remedy above all others, and a special warning given against the use of forceps and instruments in general, without ample assistance and illumination. Would that the general practitioner heed this at last!

It is incorrect to ascribe a corium to the drum membranes (p. 90); the mucosa of the drum, too, has a ciliated cylindrical, not a ciliated pavement epithelium and no glands.²

The domain of acute idiopathic myringitis, in my opinion, should be still more limited than is usually done and also by Hartmann; the distinguishing feature as compared with the slighter forms of acute otitis media, namely that the hearing is less impaired in the former, I find to be insufficient. Although it is generally assumed that labyrinthine pressure rises in occlusion of the tube and consequent rarefaction of the air in the drum cavity, the opposite is the case, according to Politzer's experiments on fresh specimens: labyrinthine pressure decreases, because the

¹ Other authors, such as Politzer, do not seem to employ cold at all; the latter, although he states cataplasms and warm fomentations to the meatus to be injurious, recommends "moist warm poultices to the region of the ear," covered with oiled silk, as particularly efficacious. And in Kunig's *Vademecum* (Leipzig, 1880) we find on the treatment of acute otitis media, "Beware of quite cold and hot applications"; that is to say, the *juste milieu*, characteristic of the impression produced on laymen by the diverging opinions of the profession.

² Compare my contributions to the anatomy and histology of the middle ear.

lessened pressure at the fenestra rotunda (provided its membrane is movable) more than compensates for the positive pressure at the fenestra ovalis.

In concluding, I heartily commend Hartmann's book to all beginners in otology as well as to the general practitioner; it gives them, in pleasant brevity, a faithful picture of the present state of otology.

V.

The Human Ear and its Diseases : A Practical Treatise upon the Examination, Recognition, and Treatment of Affections of the Ear and Associate Parts, etc. By W. H. WINSLOW, M.D., Ph.D., Oculist and Aurist to the Pittsburgh Homœopathic Hospital, etc., pp. viii, 526. N. Y. and Phila. : Boericke & Tafel, 1882.

Though emanating from a practitioner who styles himself homœopathic, this work contains nothing indicative of this fact, except suggestions as to internal medication. External medication differs in no particular from that recommended in our standard text-books on otology. The anatomy of the ear and its appendages is very fully considered and illustrated by wood-cuts, which are, in most cases, credited to Dr. C. H. Burnett's treatise, but which are for the most part from Gruber or Henle. None of the illustrations in the work—of which there is an abundance—are original. In fact, there is nothing in the treatise which is original, but the views of others are put forth, as a rule, with clearness and correctness, and the work may be taken as representing fairly the status of otological symptomatology and diagnosis. As to treatment, it represents one side or the other of the opposing camps, and is sometimes as heroic as the most ardent allopath (so-called) could wish.

Having been during the late war a naval officer, he was in a position to judge of the effects of heavy cannonading in the ears. His experience corresponds with that of Gruber, that rupture of the drum-head from this cause is extremely rare.

He believes in the frequent occurrence of affections of the ear of a painful nature from carious teeth. He also recommends the long tabooed poultice in inflammations of the external auditory canal or drum cavity. Considerable space is given to the consideration of diseases of the nose and pharynx, in their connection with ear disease.

One chapter is devoted to electricity in aural disease, with an evident belief in its value. In this, however, we are inclined to believe the author stands almost, if not quite alone. The evidence of some of the most careful and conscientious observers goes to show that electricity is of little benefit in any form of ear affection.

The chapter on the affections of the internal ear is very obscure and unsatisfactory, though perhaps not more so than our actual knowledge of the subject.

S. M. BURNETT.

REPORT ON THE PROGRESS OF OTOLGY IN
THE SECOND HALF OF THE YEAR 1881
(July to November.)

I.—NORMAL AND PATHOLOGICAL ANATOMY OF THE ORGAN
OF HEARING.

By H. STEINBRÜGGE, HEIDELBERG.

Translated by ISIDOR FURST, New York.

1. W. KIRCHNER. Würzburg. Beitrag zur Topographie der äusseren Ohrtheile, mit Berücksichtigung der hier einwirkenden Verletzungen. (Contribution to the topography of the external parts of the ear, with reference to injuries acting upon them.) (Habilitationsschrift.) *Verhandl. der phys. med. Gesellsch. zu Würzburg*. N. F., Bd. xvi.

2. MAX FLESCHE. Privadocent and Prosector at Würzburg. Kleinere Beiträge zur normalen und pathologischen Anatomie des Gehörorgans. (Minor contributions to the normal and pathological anatomy of the organ of hearing.) *Arch. f. O.*, Bd. xviii, H. 1 and 2.

3. OREN D. POMEROV, New York. A case of intracranial myxosarcoma destroying the whole of the organ of hearing, bursting through the external parts, and forming a large tumor which depended from the ear. *Amer. Journ. of Otology*, vol. iii, No. 2.

4. SCHÄFER. Ein Fall von Herderkrankung des Schläfenlappens. (A case of circumscribed affection of the temporal lobe.) *Centralbl. f. Nervenheilkunde*, 1881, No. 3. Reviewed by Wernicke in *Centralbl. f. d. med. Wissensch.*, 1881, No. 38.

1. The author, in the preface, deals first with the forensically important questions, whether previous to a traumatic injury of the

organ of hearing there existed anomalies of development or morbid alterations; whether an originally unimportant injury, by the supervention of accidental deleterious circumstances, had been succeeded by grave results to the ear, or eventually to health and life. Then follows the discussion of lesions of the auricle and the introitus of the meatus, in which connection it should be pointed out that the symptoms do not always correspond with the extent of the traumatic influence, violent symptoms often appearing after even slight injuries. This is succeeded by the consideration of othæmatoma. The author treats this affection by a free incision and antiseptic dressing. Concerning the influence exerted by destruction of the auricle, its form and position upon the hearing power, KIRCHNER has convinced himself both by clinical and experimental observations that the factors named are of subordinate importance for the acuteness of hearing. Of importance are only stenosis or adhesions at the auditory introitus which remain after the healing of cartilaginous defects. Then follows the description of the cartilaginous and osseous auditory canal, the statement of the relative sizes, the various curvatures (v. Bezold: spiral twist), which latter furnish some protection to the drum against the entrance of injuring instruments. Lesion of the anterior cartilaginous wall of the ear canal, however, may implicate the parotid gland; that of the posterior wall, the mastoid process. The author reports a case of injury to the inferior, and one to the posterior upper wall, and calls to mind the traumatic case described by Moos (wound from a knitting needle), which was succeeded by an abscess of the parotid gland. Then follows the discussion of the injuries which affect the osseous meatus; in the first place those of the anterior lower wall. The anatomical conditions which are to be considered in this connection are: the defect of ossification in the anterior wall, persisting to the fourth, rarely to the sixth year of life, and even later appearing to be closed only by a thin lamella of bone; the wedge-shaped, vertical prolongation of the tegmen tympani which subsequently inserts itself between the anterior wall of the os tympani and the posterior wall of the glenoid fossa, thus producing two fissures, one of which leads into the skull cavity as the continuation of the petroso-squamous fissure, the other into the drum cavity as the petro-tympanic fissure and sometimes communicates also with the external auditory canal. Moreover, a sinus occasionally extends to the expanse of the petroso-squamous fissure which dates

from the foetal period of development of the jugular veins, sometimes emptying into the lateral sinus or else connecting with the deep temporal veins. Even without fracture of the bone, inflammatory processes after traumatic lesions may extend from without to the middle ear through the above-described fissures, as well as through the intervention of connective-tissue trabeculae and vessels. Furthermore, there enter into consideration here the concussions affecting the lower maxilla and the erosion of the anterior wall of the auditory meatus through the pressure of the condyle. Then follows the report of two cases of implication of the anterior lower wall of the auditory canal after violence to the lower jaw, with subsequent separation of small sequestra. In the first case, after some time, perforative otitis media supervened; in the latter, a slit-like stenosis remained. In regard to the upper wall of the auditory canal, the various relations of magnitude, angular position toward the vertical pars squamosa, from birth to the completed growth of the skull, are treated of; the importance of the spina supra meatum is discussed, while in the remainder the cellular spaces are noted which separate the upper wall from the central cavity of the skull, communicate posteriorly with the mastoid cells, and extend anteriorly as far as the zygomatic process. Moreover, in the adult, in the inner half of the osseous meatus, posteriorly the vicinity of the mastoid antrum (which in the child is situated more externally) enters into consideration; antero-superiorly, however, the region of the malleo-incudal joint, which is separated from the ear-canal by a thin plate of bone merely. In connection with the posterior wall of the osseous meatus, mention is made of the tympano-mastoid fissure, also of the defects and attenuations of the bony septum, as well as the connective-tissue trabeculae and vessels which connect with the mastoid cells; then follow the dehiscences described by Zuckerkandl, and finally the sclerosis of the mastoid process. Three cases of his own are reported, being injuries of the posterior wall of the auditory canal with subsequent discharge of small sequestra; and Toynbee's case of meningitis after lesion of the ear canal by a pin is mentioned. In conclusion, the author in a few sentences recapitulates his experience in lesions of the auricle and the auditory meatus.

2. Since his previous communication on dehiscences of the tegmen tympani, FLESCHE, in making dissections, directed his special attention to these conditions, and has become convinced

that real defects of bone are of rare occurrence ; that after carefully detaching the dura mater a thin plate of bone almost always remains behind at the respective spots, which of course may be easily injured during the maceration of the skull. For that reason, statistics concerning dehiscences should not be based on macerated skulls.

In a second communication, a case of stenosis of the inner auditory meatus in consequence of a general hyperostosis of the skull is reported. (Female, æt. 25, sudden death ; fatty degeneration of the heart ; auditory disturbances or hallucinations were not observed during life.) The petrous bone in question was thicker than normal ; the internal ear canal forms a transverse fissure which in its central part widens a little (1.5 mm. in height) ; the hiatus of the Fallopian canal invisible ; the deep groove for the superficial major petrosal nerve medially changed into a canal ; the depression for the superior petrosal sinus obliterated. The examination was made on a macerated skull.

3. The case occurred in a girl of six years. For ten weeks convergent strabismus in consequence of paralysis of the left abducent nerve. Diplopia. Right, chronic catarrh of the middle ear ; left, a small polypus proliferating from a perforation of the membrana tympani. Acuteness of hearing, especially on the left side, very much diminished. Tuning-fork perceived on the left. No fever. Removal of the polypus. Pain in the left eye and ear. Somnolence ; later, oculo-motor paralysis (left) and hyperæmia of the optic nerve. Tremors in the extremities and considerable fluctuations in the frequency of the pulse. After ten weeks, profuse left-sided otorrhœa ; a soft tumor in the ear canal, which was removed. Symptoms of paralysis of the facial nerve. Subsequently, a rapid recurrence of the tumor ; it opens close behind the ear lobe and in front of the tragus. Severe cough a few days before death. Autopsy : the tumor had destroyed the labyrinth and the inner two thirds of the pyramid, had perforated the dura mater in two places, but had not materially implicated the brain. The perforation outward had occurred anteriorly between the large wing of the sphenoid bone and the squamous suture ; posteriorly at the junction of the temporal bone with the occiput. The left superior petrosal sinus, lateral sinus, and carotid canal obliterated. The microscopic examination of the vascular, vari-ously honeycombed tumor showed spindle-shaped, stellate, round, and polyhedral cells in the structureless, granulated, partly deli-

cately fibrillated interstitial tissue (myxosarcoma). A part of the tumor contained numerous ganglion cells, medullary and non-medullated nerve fibres, probably from Gasser's ganglion, and the author therefore supposes that the tumor originally sprang from the region of that ganglion. Another kind of peculiar granulated cells enclosed in a capsule, with large, irregular nucleus, are interpreted by the author, of course with some reservation, as young ganglion cells, while the description and also the illustration seem rather to indicate cartilage cells. In conclusion, the author cites the cases of sarcoma in the region of the auditory organ reported in literature.

4. A paralytic in Mendel's institution suffered an apoplectic seizure which was succeeded by left-sided hemiplegia. Eleven days subsequently, he always turned the head toward the right when addressed from the left. This phenomenon lasted eight days.

Five weeks later, a second apoplectic attack, with right-sided hemiplegia, followed by the same state of sound-perception, but reversed. This phenomenon likewise ceased in eight days. Death four months later. At the autopsy were found, besides the diffuse alterations characteristic of progressive paralysis, a concretion of lime in the right third temporal convolution, and the author believes that the deposit must have struck that part in the expansion of the left acoustic nerve which effects the localization of the acoustic impressions.

II.—PHYSIOLOGY OF THE ORGAN OF HEARING AND PHYSIOLOGICAL ACOUSTICS.

(JULY TO NOVEMBER, 1881.)

BY OSCAR WOLF, FRANKFORT-ON-THE-MAIN.

(With two wood-cuts.)

1. C. SPAMER. Kreisassistentzarzt in Mainz: Noch einige Worte zur Frage der Function der halbkreisförmigen Canäle des Ohres. (A few more words on the question of the function of the semicircular canals in the ear.) 4 pp. *Pflüger's Archiv für die gesammte Physiologie*, Bd. xxv, p. 177-181.

2. VICTOR URBANTSCHITSCH, Vienna: Ueber das An-

und Abklingen acustischer Empfindungen. (On the beginning and the termination of auditory sensations.) *Ibid.*, pp. 323-342.

3. HERRMANN MUNK, Berlin. Ueber die Hörsphären der Grosshirnrinde. (On the acoustic centres of the cerebral cortex. Lecture.) From the *Monatsbericht der Königl. Akademie der Wissenschaften zu Berlin*, May, 1881, 15 pp.

4. WILHELM MOLDENHAUER, Leipzig. Zur Physiologie des Gehörorgans Neugeborener. (Contribution to the physiology of the organ of hearing in the new-born.) Beiträge zur Geburtshilfe, Gynäkologie, und Pädiatrik, gewidmet dem Herrn Geh. Medicinalrath Dr. Crédé, Leipzig, published by Witte, printed by Engelmann, 1881, pp. 199-204.

5. EDOUARD FOURNIÉ. Médecin de l'Institut National des Sourds-Muets à Paris: Physiologie des sons, de la voix, et de la parole. *Revue médicale française et étrangère*, 8 Oct., 1881, 61^e année, pp. 505-513.

1. At the same time when the reviewer¹ laid down in these ARCHIVES the objections he held against Baginsky's conclusions, SPAMER likewise maintained, in the present reply, his standpoint concerning the question of the *functions of the semicircular canals*. He, too, does not admit that the non-occurrence of disturbances of equilibrium in complete destruction of the labyrinth invalidates Goltz's doctrine; for Spamer is also of opinion that irritation alone, not the destruction of the semicircular canals, is capable of producing permanent disturbances of equilibrium; it is again pointed out that in numerous cases the dissection of the test-animal showed absolutely nothing abnormal in the brain and its meninges. But Spamer agrees with Baginsky that the *turning of the head* should be considered as the consequence of a secondary inflammation of the cerebellum.

Spamer then cites a number of reasons directed against the opinion of Baginsky, that the disturbances of movement which immediately succeed every lesion of a semicircular canal are solely the consequences of the thus effected outflow of cerebro-spinal fluid. For instance, the described disturbances of equilibrium occur even after the introduction into the osseous canal of the red-hot point of a nail.

¹ Compare these ARCHIVES, vol. x, No. 3, p. 249.

2. In continuation of his studies "on sound-perception," URBANTSCHITSCH furnishes us experiments on the *beginning and termination of auditory sensations*.

The complete formation of an acoustic impression requires a certain time, in the same way as has been proved concerning light impressions by Plateau, Brücke, and Exner. An acoustic impression, too, attains its full intensity, commensurate with the objective sound, proportionately later as the acoustic irritation is weaker.

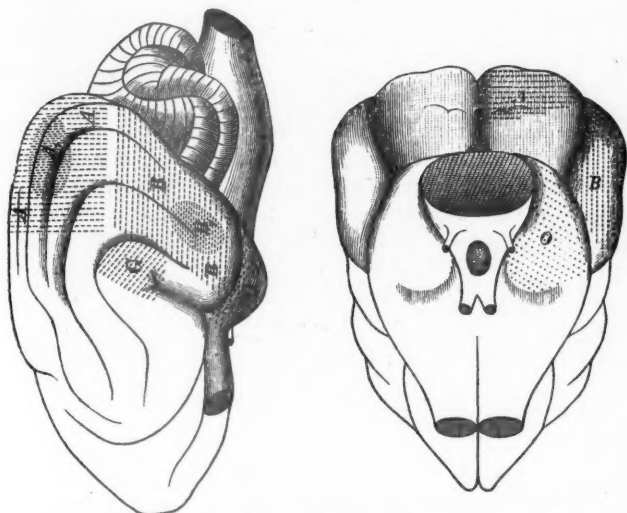
The effectuation of an acoustic sensation requires, in cases of minimal irritation, from one to two seconds or over; if, however, the several tests succeed each other rapidly, the state of irritation incited by the preceding test causes a quicker production of the auditory sensation.

Even in those with normal organs, but more strikingly in those with unilaterally impaired hearing, often a *retarded* perception of sound may be demonstrated in either ear if a source of sound is simultaneously conducted to both ears by means of a three-armed otoscope. Such persons sometimes perceive loud tuning-fork tones or the ticking of a watch up to ten seconds later on the diseased ear, and thus occurs the *echo-like* phenomenon (which has been repeatedly described by otologists, but which has not hitherto found a sufficient acoustic explanation—Rev.).

For the experiments on the *termination of auditory sensations* Urbantschitsch employed a pendulum apparatus, by means of which the tone of a tuning-fork can be conducted to the person tested in accurately determinable intervals. Helmholtz's view was confirmed, that high tones die away more rapidly than low ones.

3. Prof. MUNK, in his lecture, first recalls to mind the experiments on the acoustic centre which he performed during 1876 and 1877, and which offered so many difficulties. In consequence of the bilateral extirpation of a *certain portion of the temporal lobe* (part B' in the figure), the dog in question was "soul-deaf," *i. e.*, he still heard, but had lost the memory images of sound, he understood no longer what he heard; the animal, however, gradually again learned to understand what he heard, and four or five weeks after the operation he appeared the same as before. Accordingly, the small extirpated part of the cerebral cortex must appertain to a larger acoustic centre serving for the perception of hearing, the entire destruction of which should lead us to

expect complete deafness. Munk really succeeded in removing¹ from several animals (dogs) bilaterally the parts of the cerebral cortex marked BB'B in the cut, in keeping the animals healthy for from two and a half to four months, and in utilizing them for acoustic tests.



AA'A, Visual centre. BB'B, Acoustic centre. G, Otic region of the tactile centre. O, Olfactory centre in the gyrus hippocampi.

The result is in two directions highly important, even fundamental. For Munk found that those animals in which both acoustic centres were destroyed became completely deaf and gradually also dumb. The author describes the behavior of animals thus operated upon, in the following manner.

"As soon as the narcosis after the second operation has passed off, the dog walks and runs about in a lively manner, and after a few days, when the moderate fever has subsided, he behaves like a healthy dog, plays and romps with his fellows. In the execution of bodily motions, as well as in the variety of actions, he presents no manner of deviation from the normal. His vegeta-

¹ The operation was first performed on one hemisphere, and one or two months later, when the wound had healed, in like manner on the other hemisphere.

tive functions, too, are all normally performed, and seeing, smelling, tasting, feeling, are also perfectly normal. But the dog is deaf, completely deaf on both ears. While formerly the slightest uncommon noise attracted his attention and caused movements, we now may call, scream, make noise as much as we please; we may make music, whistle, and beat the gong until it becomes intolerable not only to men but also to the other dogs; his mates may bark alone or in terrific concert and howl; none of that, as long as nothing uncommon strikes his eye, will in the least disturb his equanimity; whether lying, standing, or walking, with no motion of any sort does he react to the sound; even the auricles, which otherwise frequently move to and fro whenever he looks at any thing attentively, remain perfectly quiet. Withal, the intelligence of the dog appears to be no further impaired than would be natural to the deafness; and by diligent spying about and by attentive gazing at the men on whom he is dependent, he seems to some extent to make up for the loss sustained by the deafness. Thus the dog remains unchanged, as long as he lives and keeps healthy, except that the deafness becomes associated with deaf-mutism. Already in the first week he always barks only for a brief period, in a rather peculiarly hard and monotonous manner, occasionally discordantly; later, he bays only for some seconds quite faintly and roughly, often hoarsely; finally, in most cases after two weeks, he no longer attempts to bark. While the noise at the door, the stranger in the stable, the passer-by at the railing of the yard set the whole pack of dogs barking; while his mates at play with him accompany the merry bounds, at fight with him for the meat or the slut in heat, supplement the spiteful bites with barks—all through our dog remains mute; and were it not that ill-treatment made him yelp and howl, we might think him to be voiceless. Otherwise, in the two and a half to four months during which I could observe these dogs in perfect health, nothing noteworthy occurred."

A second fact deducible from Munk's experiments is, that a decussation of the fibres of the acoustic nerve occurs in the brain. Namely, if after totally extirpating one acoustic centre, the organ of hearing of the *same side* is destroyed by breaking away the lower cochlear wall, the dog thus treated becomes completely deaf and soon also deaf-mute, and he corresponds exactly in his behavior with those dogs both of whose acoustic centres had been extirpated or both of whose auditory organs had been destroyed.

Previous to the second operation—the breaking away of the lower cochlear wall—the dog in question, after sound impulses, had erected the ear on the injured side exclusively, or invariably turned the head first in that direction.

Finally, the experimenter could demonstrate, after incomplete removal of the acoustic centres, *i. e.*, if the anterior or posterior portion of the particular cortical substance was left behind, that the dog operated upon did not hear some series of tones, while others were well perceived. Munk does not undervalue the difficulties encountered in testing analytically the hearing of animals, but believes himself justified in announcing as a certain result that the *posterior part* of the acoustic centre in the neighborhood of the cerebellum serves for the perception of *low tones*; that the *anterior part*, near the fossa Sylvii, serves in the perception of *high tones*. Where, perhaps, only the anterior third or less of the acoustic centre was preserved, the dog did not hear the tones of low organ pipes C^{-1} and c° , nor the call in deep base, nor low noises in general, and especially not the deep loud noise produced by short knocks against the centre of the gong. Inversely, where only about the posterior third of the acoustic centre was preserved, the dog did not hear the whistle, nor the tones of high pipes (c° , c^{\sharp} , c^{\flat}), nor the high call in falsetto.

Munk besides thinks it probable that the ordinary and everyday hearing of the dog is mainly confined to the lower half of the acoustic centre. For where only about the lower third of the acoustic centre was preserved, the dog apparently heard everything, even if he did not understand the call, and barked as before; on the other hand, where only about the upper third of the acoustic centre was left, the dog heard badly in general, reacted to the various tones and noises but little, and sometimes not at all; and barked only for a short time, and rarely.

Munk has been unable to demonstrate that the perception of *single tones and noises* was entirely lost.

4. MOLDENHAUER has tested, in Cr  d  's clinic, the perceptive capacity of fifty children of the ages from one hour up to five or more days. In the majority of cases, the investigations were undertaken with full-term children; but some tests were also made with children three or four weeks premature; the experimenter was unable to demonstrate any difference in the perceptive capacity between full-term and premature children. The source of sound was the "cricri," which is well known to give an exceedingly sharp tone disagreeable to the ear of adults.

The examinations led to the result that, with very few exceptions, the children plainly reacted to the sound immediately at the first test. To be sure, the intensity of the reaction was often exceedingly variable, not only in different individuals, but in the same child on several days, and under varying conditions. Beyond the second day the reaction ensued decidedly more promptly and distinctly than during the first days; from the third day on, an essential increase could not be certainly demonstrated for the first week of life. As regards the manner and the degree of the reaction, the reflex movements of the child lying quietly in front of the experimenter varied from distinct trembling of the eyelids to a corrugation of the forehead, and once a single brief turn of the entire head. In the higher degrees the picture was that of an individual seized with great terror. Sleeping children awoke, and frequently commenced to cry. But the excitability on impressions of sound very soon decreased after oft repeated experiments, so that a blunting or habituation even to entire absence of reaction ensued.

In conclusion, Moldenhauer states that new-born children undoubtedly have a sensation of intense impressions of sound, but leaves it undecided whether this sensation can be considered as one of hearing or of pain. For Politzer had assumed¹ that the acoustic nerve contains fibres which do not serve for the perception of sound, but which are likewise excited by sound waves, and provoke impressions of pain. If we bear in mind that the piercing tone of the "cricri" produces even in adults a very disagreeable, almost painful impression, the possibility of a similar sensation in the new-born cannot be denied. In the Reviewer's opinion, Moldenhauer might have employed, on account of these doubts, other modes of testing which do not produce painful sensations; among others, deep and medium tones of flutes, clarionets, or bassoons would certainly have proved advantageous for these experiments; with a little practice it is not difficult to produce an equal intensity of tone with wooden wind instruments.

Altogether, in Moldenhauer's experiments with the cricri, the possibility is not excluded that the above reflex movements were effected through an irritation of the sensitive fibres of the trigeminus in the external auditory meatus. Compare Moos: Ueber den Zusammenhang zwischen Krankheiten des Gehörorgans und solchen des Nervus Trigeminus, *Virchow's Archiv*, Bd. lxxviii.

¹ *Lehrbuch der Ohrenheilkunde*, p. 229.

5. FOURNIÉ, in the present treatise, first calls attention to the two well-known theories of voice-formation : the former explains the production of tones according to the mechanism developing the tone at the mouth-piece of an organ pipe ; the second assumes that the process of tone-formation resembles that at the membranous reeds of wind instruments, in which the entire reed is set vibrating (Joh. Müller). Fournié holds both theories to be erroneous, and attempts to prove by experiments that the tone arises essentially from the vibrations produced by the current of air in the folds of the mucous membrane lining the margin of the cartilaginous vocal cords. For, after the mucous membrane has been removed, and the air is allowed to pass through the vocal cords thus prepared, only an explosive noise results, but no sonorous vibrations.

The modifications of tone are produced both by alteration in the tension of the vocal cords and by modification in the width of the fissure. Fournié next describes an artificial larynx constructed of caoutchouc in accordance with this theory, with which he means to produce the various alterations of tone which the human larynx is capable of, by a widening of the fissure, as well as by greater tension of the membranous vocal cords. This appears improbable to the Reviewer for the simple reason that such an instrument lacks the space of resonance present in the cavity of the mouth and pharynx. Faber's speaking machine, described by the Reviewer (in "*Sprache und Ohr*," p. 67) assuredly acted more perfectly, more than seventy years ago, than Fournié's instrument, which hardly offers any thing new.

The author even emphasizes that the space of resonance of the cavity of the mouth and pharynx gives to the vocal sounds their peculiar character, and therein distinguishes six regions which may form special sounds by their resonance : 1. The region of cavity of the mouth. 2. The region of the nasal cavity. 3. The glosso-palatal region. 4. The middle (? Rev.) glosso-palatal region. 5. The anterior glosso-palatal region. 6. The lateral glosso-palatal region, namely for A, È ouvert, E simple and Ê, I and I russe. In these we have to deal with simple resonance only, while O, OU, EÛ, EU, ÉU, U require a double resonance, *i. e.*, the co-operation of two resonance spaces, and AN, ON, EIN, EUN that of three.

A proof for these views is nowhere furnished, nor is account taken of the variation in the configuration of the opening of the

mouth, which is of such importance in the pronunciation of the various vowels. The Reviewer likewise cannot concur in the classification of the consonants advocated by the author, inasmuch as it is utterly useless in an acoustic sense. The consonants are divided into: 1. *Soufflantes*, (H, Ch as in chat, S, F); 2. *Murmurantes orales* (g in gueusti, j in jardin, Z, th anglais, L); 3. *Murmurantes nasales* (ng in onguent, gn in seigneur, N. and M); 4. *Vibrantes* (R); 5. *Demi-explosives*, (g in gamin, dj in adjuvant, D, DZ, B); 6. *Explosives*, (V, tch, T, TS, and P).

III.—PATHOLOGY AND TREATMENT OF THE ORGAN OF HEARING.

BY A. HARTMANN, OF BERLIN.

(Conclusion of the first half of 1881.)

NERVOUS APPARATUS.

50. J. GOTTSTEIN, Breslau. Weitere Beiträge zur neuropathischen Form des Ménière'schen Symptomencomplexes. (Further contributions to the neuropathic form of the Ménière group of symptoms.) *Arch. f. Ohrenheilk.*, Bd. xvii, p. 174.

51. MCBRIDE, Edinburgh. The etiology of vertigo. *Med. Times and Gazette*, Jan. 22 and 29, 1881.

52. LUCAE. Ueber optischen Schwindel bei Druckerhöhung im Ohre. (On optic vertigo in increased aural tension.) Verhandl. der physiol. Gesellsch. in Berlin, Feb. 11, 1881.

53. J. A. SPALDING, Portland. Diplacusis binauralis: a self-observation. These ARCHIVES, vol. ix, p. 330.

54. H. SCHWARTZE. Stichverletzung des Ohres mit Ausfluss von Liquor cerebrospinalis. Schwere Hirnreizungssymptome durch Hirnhyperämie. Heilung. (Stab-wound of the ear, with escape of cerebro-spinal fluid. Grave symptoms of cerebral irritation due to hyperæmia of the brain. Recovery.) *Arch. f. Ohrenheilk.* Bd. xvii, p. 117.

55. R. KÖRNER, k. s. Stabsarzt. Schussverletzung des Ohres mit Ausfluss von liquor cerebro-spinalis. (Gunshot wound of the ear, with escape of cerebro-spinal fluid.) *Ibid.*, p. 195.

56. JAMES LOVE. Fracture of base of skull. Recovery. *Glasgow Med. Fourn.*, vol. xv, No. 3.

50. GOTTSTEIN adds some new observations to those formerly reported (these ARCHIVES, vol. ix) respecting the neuropathic form of the Ménière group of symptoms. A great number of cases appearing at first sight as Voltolini's otitis labyrinthica prove on closer inspection to be secondary forms, especially of cerebro-spinal meningitis. The meningitic symptoms invariably precede those of the ear, thus invalidating Voltolini's argumentation. The facial nerve need not be implicated. Gottstein twice observed anæsthesia in the auriculo-temporal nerve, and one patient could perforate her drum-membrane with a little piece of wood without feeling any pain. In conclusion, Gottstein summarizes his view in stating his belief that the cases described as otitis labyrinthica are secondary to an affection of the trunk of the acoustic nerve, in consequence of meningitis.

51. MCBRIDE's explanations respecting the etiology of vertigo culminate in his assumption of a cerebral centre the excitation of which produces vertigo. This centre can be excited by influences from the eye, ear, sensorial or visceral, as well as central alterations. Impressions reaching one of these centres draw the others into their domain, during excess of nervous excitement. Hyper-excitation of the vertiginous centre excites the various motor centres and probably causes unconsciousness also. According to the centre first affected, we distinguish whether we have to deal with optic, stomachal, or aural vertigo.

52. LUCÆ, in defects of the drum-membrane with completely pervious tubes, observed symptoms of vertigo, if the atmospheric pressure in the external ear canal was suddenly increased. In one case, which is reported in detail, with an excess of pressure in the left ear of 0.1 atmosphere, vertigo occurred coupled with the sensation as if objects were turning from left to right; in the right ear, the direction of the apparent gyration was reversed. There was also observed a dimming, an obscuration before the eyes; with greater pressure, scintillations of light, immediately increased frequency of respiration which became deeper and frequently interrupted by sighs. On examining the eyes, the globe of the irritated side was found abducted, and Lucæ therefore ascribes the symptom of vertigo to crossed double images.

Lucæ considers these phenomena to be difficult of explanation, inasmuch as the variations of pressure propagated from the labyrinth to the brain can be but minimal, unless we should assume that by their abrupt effect they excite the cerebral nerves situated

at the base of the brain (acoustic, abducent, optic tract, and Christiani's centre of inspiration). A second explanation, according to Lucae, would be, that the dura mater was irritated through dehiscences in the tegmen tympani. Besides, Lucae thinks, we might take into consideration the irritation exerted on the tympanic plexus by the puffs of air.

54. SCHWARTZE communicates a case of injury, by means of a knitting-needle, of the membrana tympani in the region of the stapes, which was followed by transient syncope, vomiting, no hemorrhage, but escape of cerebro-spinal fluid from the ear. This flow lasted eight days and was so profuse that there was a continuous trickling. The most violent earache, headache, and vertigo at once set in and were followed by symptoms of cerebral irritation (headache, photophobia, cutaneous hyperæsthesia, isolated partial convulsions, restlessness, delirium, insomnia with vivid dreams) lasting four weeks. They were ascribed to a febrile (temperature in the beginning above 39° C.) cerebral hyperæmia said to be induced by the escape of the cerebro-spinal fluid. Schwartz leaves it an open question whether there had been a lesion of the labyrinth from the penetration of the needle into the fenestra ovalis or into some other part of the wall of the labyrinth. The possibility is also admitted that the cerebral fluid might have been evacuated through the tegmen tympani, after its perforation by the needle, with simultaneous rupture of the mucous membrane and the dura mater.

55. In the gunshot wound reported by KÖRNER, the ball had entered the right auricle close behind the opening of the external meatus; there was no point of exit. After the injury, no loss of consciousness, but violent pain, loss of equilibrium, walking in a circle, deafness. From the wound oozed a watery transparent liquid mixed with blood (cerebro-spinal fluid). Two days after the injury, the discharge amounted still to about 2 ccm. in the course of fifteen minutes. This flow continued eight days. Recovery ensued with deafness, without removal of the bullet. At the last examination made, the drum-membrane was found completely absent, excepting a few cicatricial strings at the superior margin; about one third of the circumference of the bullet could be seen embedded in the posterior wall of the drum cavity; it could not be moved with the probe.

56. LOVE reports a case of fracture of the base of the skull, with escape of blood from ear and nose for two days, and of cere-

bro-spinal fluid from the former. Recovery. A facial paresis originally present passed off.

NOSE AND NASO-PHARYNX.

57. JULIUS ALTHAUS, London. A lecture on the physiology and pathology of the olfactory nerve. *Lancet*, May 14 and 21, 1881.

58. JURASZ, Heidelberg. Ein einfaches Nasenspeculum. (A simple nasal speculum.) *Mon. f. O.*, No. 6, 1881.

59. CRESWELL BABER. Self-retaining nasal speculum. *Brit. Med. Fourn.*, Jan. 8, 1881.

60. B. FRÄNKEL. Zur Rhinoscopie. *Berl. klin. Wochenschr.*, No. 3, 1881.

61. ARTHUR HARTMANN. Ueber rhinoscopisches Operiren. (On rhinoscopic operations.) *Ibid.*, No. 23, 1881.

62. J. HABERMANN, Prague. Beitrag zur Untersuchung des Cavum pharyngo-nasale mit den Zaufal'schen Nasenrachen-trichtern. (Contribution to the examination of the naso-pharyngeal cavity with Zaufal's funnels.) *Wien. med. Presse*, No. 23, 24, 25, 1881.

63. GOTSTEIN, Breslau. Ueber die verschiedenen Formen der Rhinitis und deren Behandlung mittelst der Tamponade. (On the various forms of rhinitis, and their treatment, by means of the tamponade.) *Berl. klin. Wochenschr.*, No. 4, 1881.

64. M. SCHÄFFER, Bremen. Ozäna. *Mon. f. O.*, No. 4, 1881.

65. ALFRED MARTIN, Paris. De l'ozène vraie. Paris: A. Parent, 1881.

66. E. FRÄNKEL, Hamburg. Kritische Bemerkungen zu der Brochure des Docteur etc. Alfred Martin, "De l'ozène vraie." (Critical remarks on Dr. Martin's pamphlet, etc.) *Bresl. ärztl. Zeitschr.*, No. 11, 1881.

67. A. HARTMANN, Berlin. On epistaxis, nasal tamponade, and their relations to affections of the organ of hearing. These *ARCHIVES*, vol. x, p. 149.

68. W. R. SPEIERS, Haltwhistle. Notes of a case, the chief symptom of which consisted in persistent and copious secretion of a watery fluid from the nose. *Lancet*, March 5, 1881.

69. BEZOLD, Munich. Zur operativen Behandlung der adenoiden Vegetationen des Nasenrachenraumes. (On the operative treatment of the adenoid vegetations of the naso-pharynx.) *Äerztl. Intelligbl.*, No. 14, 1881.

70. J. MICHAEL, Hamburg. Doppelmeissel zur Behandlung adenoider Vegetationen des Nasenrachenraumes. (Double chisel for the treatment of adenoid vegetations of the nasopharynx.) *Berl. klin. Wochenschr.*, No. 5, 1881.

71. ARTHUR HARTMANN. Ueber die Operation der adenoiden Wucherungen und hypertrophischen Pharynxtonsillen. (On the operation of the adenoid proliferations and hypertrophied tonsils.) *Deutsche med. Wochenschr.*, No. 9, 1881.

72. VICTOR LANGE. Om Naesepolyper. (On nasal polypi.) Copenhagen, 1880.

73. ARTHUR HARTMANN. Ueber die Operation der Nasenrachenpolypen. (On the operation of naso-pharyngeal polypi.) *Deutsche med. Wochenschr.*, No. 6, 1881.

74. TH. HERRING, Warschau. Zur Casuistic der Fremdkörper und Concretionen in der Nasenhöhle. (Clinical cases of foreign bodies and concretions in the nasal cavity.) *Mon. f. O.*, No. 5, 1881.

57. After an introductory discussion of the importance of the olfactory organ, ALTHAUS gives a synopsis of its pathology. Any thing interfering with the secretion of the mucous membrane—excessive heat or cold, inspiration of dust, and the first stage of coryza—diminishes the sense of smell. Persons with a dry mucous membrane can smell well only in moist air. In like manner, an excess of mucus is unfavorable to smell.

Congenital absence of the sense of smell is rare. At times the olfactory nerve suffers atrophy. In fractures of the skull, anosmia arises from tearing of the nerve as it passes the ethmoid foramina. Excessive irritation may destroy the sense of smell temporarily or permanently. Althaus mentions the case of a Bremen physician who suffered permanent loss of smell after dissection of a gastric carcinoma. Inflammation of the olfactory nerve seems to be of very rare occurrence; one case came under Althaus' observation. Chronic neuritis of the olfactorius with loss of smell may occur in syphilis. Anosmia may also be found in neoplasms at the base of the skull and in affections of the cerebral olfactory centre.

As to treatment, two drugs have antagonistic effects: strychnia increases, morphia diminishes olfactory perception. According to Althaus, strychnia, either locally or internally, wonderfully increases the acuteness of the sense of smell, especially the former. For anosmia, Althaus prescribes strychnia, gr. $\frac{1}{4}$, with powdered

sugar, gr. 2, to be snuffed up twice daily; the dose is increased to gr. $\frac{1}{2}$. In hyperosmia of epileptics, Althaus injects subcutaneously morphinæ acet., gr. $\frac{1}{4}$, with atropinæ sulph., gr. $\frac{1}{16}$. He cautions against the employment of the constant current.

In conclusion, the diagnostic value of certain smells in the sick-room is discussed.

58. JURASZ describes a very simple nasal speculum. It consists of two equal dilators constructed of thick wire, resembling in form large hair-pins, the terminal ends of which are bent in opposite directions at an approximately right angle. Each of the dilators must be held in one hand. During operations, Jurasz uses but one dilator. (In the absence of the certainly more convenient bivalve specula, Jurasz' dilators, which in case of necessity, as pointed out in conclusion by the author, can be easily formed from a hair-pin, will certainly deserve consideration.—Rev.)

59. BABER's speculum consists of two hooks of silver-plated wire, joined by an elastic ribbon which is made to encircle the head. The posterior side of the ribbon is provided with a buckle. (Unfortunately it is impossible to press the tip of the nose upward with such an instrument, so that the view is quite imperfect.)

60. FRÄNKEL, in his lecture, discusses the importance of examination of the naso-pharyngeal space, and points out the obstacles in the way of simple posterior rhinoscopy. The examination with the palate hook, after Voltolini, Fränkel considers an essential progress in rhinoscopy. Inasmuch as it appears desirable to have the hand free which is required for the hook, Fränkel fastens it to the patient, one hook being attached by means of a screw to the upper frame of the Whitehead oral speculum. Fränkel did not succeed well with a hook devised by Hartmann for the same purpose.

61. HARTMANN describes the application of the hook which may be attached to the patient, and which he exhibited at the meeting of natural philosophers at Baden-Baden. This is followed by the description of an oral speculum which is much simpler than Whitehead's instrument; to it may also be attached the appliance for the fixation of the soft palate in the manner devised by Fränkel. For patients who cannot bear the application of the palate hook, or have an invincible repugnance to it, Hartmann recommends the performance of rhinoscopic operations, or even examinations, under chloroform. Such a rhinoscopic operation is described, which was performed under chloroform, the patient being in the sitting position.

62. HABERMANN, in his essay, enumerates the opinions expressed for and against the application of Zaufal's naso-pharyngeal funnels. He himself has employed them in the examination of about 2,000 patients. The manner of the examination is briefly discussed, and mention made of the fact that Zaufal lately has had convex lenses attached to the funnels for the enlargement of the image. The stronger numbers are required only for therapeutic manipulations. Habermann examined with the funnels even children of from five to seven years; among 674 patients, the examination could be made bilaterally in 510, *i. e.*, 75.7 %, and unilaterally in 112, *i. e.*, 16.6 %. In 47 patients it was impossible to introduce the funnels; 5 objected to their employment. Posterior rhinoscopy with mirror and tongue-depressor succeeded only in 58.3 % of those examined. The pain on introducing the funnels is quite inconsiderable; hemorrhage occurred 32 times in the cases examined. Larger projections and distortions of the nasal septum were noticed in 102 among the 674 patients; unilaterally in 96, bilaterally in 6. In but 37 cases they formed an obstacle to the examination.

63. GOTTSTEIN believes that his method for the treatment of fetid rhinitis has not met with sufficient encouragement, and formulates the following statements: "1. I know of no remedy that, in every form of rhinitis associated with the formation of crusts, is better fitted to loosen the crusts present and to liquefy the secretions generally than the tamponade. 2. In the so-called atrophic rhinitis, the tamponade removes the fetor, while it liquefies the secretions; but the former is not affected thereby if due to necrosis. 3. In the atrophic form the tamponade is only effective when the tampon is in contact with the atrophically diseased mucous membrane." Gottstein is convinced that there is no ozæna without real disease of the nasal mucous membrane or its adjoining cavities, and that various processes, of both dyscratic and non-dyscratic origin, form the basis of the fetor. The atrophic form of ozæna develops from the hypertrophic. In the latter affection, Gottstein saw good results from galvano-caustic treatment where there was hyperplasia of the mucous membrane; the same treatment failed with him if the inflammation sprang from cartilage or bone. One case is communicated in which the occlusion of the nose was caused by perichondritis of the septum. Recovery ensued with large loss of substance in the septum. Syphilis could be excluded. In the tamponade it is essential

that the cotton comes in contact with the diseased mucous membrane. It is good practice to make the tampon long enough to reach the choanæ, 4 to 5 *cm.* long, and at most $\frac{1}{2}$ *cm.* thick. The cotton is wrapped around the previously recommended small screw with double thread, and introduced with it.

64. SCHÄFFER considers the fact as established that ozæna occurs only on dyscratic soil in scrofulous, phthisical, syphilitic individuals, and believes that on this soil is developed the ferment which decomposes the secretion and gives it the pestilential odor. With Gottstein, Fränkel, and others, Schäffer distinguishes a hypertrophic and an atrophic stage of ozæna. In the hypertrophic stage there is usually a very profuse, thickly purulent, creamy secretion. In the atrophic stage, thin, delicate crusts form. Of his cases, 47 belonged to the first, 52 to the second stage. Scrofulous ozæna, according to Schäffer, seems to develop from the ninth to the twelfth year, and he believes that the duration of the hypertrophic stage extends over six to eight years. Schäffer's treatment consists of nasal irrigations with a lukewarm solution of potassium chlorate, by means of the posterior nares syringe. Besides, cotton tampons are worn for several hours daily, and insufflations made with boracic acid, alum, tannin, sodium benzoate with talcum (1:5), silver nitrate with talcum (0.1-1:5), and with pure iodoform in syphilis. Attention must also be directed to general treatment and hygienic conditions.

65, 66. Basing on observations made at Calmette's clinique, MARTIN furnishes a very thorough, and, in the Reviewer's opinion, very characteristic description of ozæna, which, in the main, follows the view advocated by Zaufal. FRÄNKEL, in a reply, attempts to prove most of the deductions made by Martin to be incorrect.

Martin distinguishes, as is now almost generally done, two forms of ozæna—that with osseous destruction and that without affection of the bone, the non-symptomatic, true ozæna. Ozæna, as a rule, sets in at puberty. While Martin is of the opinion that patients suffering from ozæna do not show a scrofulous aspect, that their affection rather marks them as scrofulous individuals, Fränkel's patients were, at least in the great majority, ill-nourished, poorly developed persons who would have to be designated as scrofulous.

According to Martin, who in this respect adopts Zaufal's views,

the primary affection in the development of ozæna is the abnormal width of the nasal cavities, in consequence of which the disease of the mucous membrane occurs, produced by the irritation of the inspissated secretion. Fränkel, on the other hand, ranges himself with Gottstein, who assumes that ozæna occurs in consequence of a hypertrophic nasal catarrh which later changes into atrophy. Martin emphasizes that we inquire in vain of patients for the first stage of the affection, while Fränkel refers to Bresgen's statement that we can in all cases of ozæna demonstrate that at first an ordinary nasal catarrh had existed, unaccompanied by fetor. (The Reviewer, like Martin, almost invariably received from his ozæna patients the assurance that they had never suffered from chronic catarrh. The first symptom to occur is the formation of crusts and the offensive odor.) Martin's treatment consists of syringing with the posterior nares syringe after Michel, and of the employment of the tamponade after Gottstein.

68. SPEIERS describes a case of continuous trickling of watery fluid from the nose which had existed for nine months. The discharge was so considerable as to fill an egg-cup, holding nearly an ounce, in the course of fifteen minutes. The mucous membrane showed nothing morbid. Recovery ensued in the course of a week, after the patient had kept his nostrils continually filled with goose grease.

69. For the removal of adenoid proliferations BEZOLD employs Wilde's *écraseur* which is introduced through the nose. If the nose is impervious to the instrument Bezold uses the spoon, the ring of which has been modified by Justi so as to form a prolongation of the finger-nail. The ring intended for the third phalanx of the index finger should fit the finger exactly.

70. MICHAEL recommends for the removal of adenoid vegetations of the naso-pharynx a forceps called by him a hollow chisel, which differs from the ordinary form by a greater curvature of the part inserted into the naso-pharyngeal space.

71. HARTMANN employs the *écraseur* for the removal of adenoid vegetations and hypertrophied tonsils. The terminal piece used for this purpose consists of a tube the end of which is split in the centre and formed into a groove. The latter piece is bent to form an eyelet, the end being again soldered to the tube. The eyelet, therefore, consists of a groove open toward the centre which incloses the steel wire. The curvature of the terminal piece is such that if the eyelet is pressed

against the roof of the naso-pharyngeal space the proliferations are included in it and can be snared off. The operation is the mildest for the patient, the removal is effected in the most certain manner, and the apparatus is very simple.

72. In his monograph on nasal polypi (pp. 56), LANGE furnishes a very detailed description of them, and particularly of their treatment. He uses a wire snare formed on Wilde's principles.

73. HARTMANN has repeatedly succeeded in removing pediculated naso-pharyngeal polypi by tearing them off through the mouth. Two cases are reported in which the removal of polypi was accomplished in this manner without causing any particular pain. Inasmuch as the application of the wire snare from the nose is not always easy, frequently fails, and is conjoined with many inconveniences for the patient, Hartmann believes that the tearing off of polypi has several advantages, *i. e.*, more complete, more rapid, and more agreeable removal of the growths. There are no incidental injuries to be feared.

74. HERRING reports two cases of foreign bodies in the nose. In the one case, a button, 12 mm. broad, was extracted with dressing-forceps. In the second case, the patient had put a button into the nose nine years before, and a calculus had formed around it. With the dressing-forceps a large number of small pieces could be broken off and removed. The rest was too large to be extracted, and was therefore pushed into the naso-pharyngeal space with a metallic catheter, thence it passed into the pharynx and was swallowed by the patient. The stone had caused complete disappearance of the lower, and caries of the middle turbinated bone, also erosion of the septum. The entire surface of the mucous membrane was covered with granulations.

PERSONAL INTELLIGENCE.

Dr. Hermann Steinbrügge has settled at Heidelberg as lecturer of otology at the university.

Mr. A. E. Cumberbatch has been formally appointed Aural Surgeon to St. Bartholomew's Hospital, where for several years he has had charge of the patients in the ear department.

OBITUARY.

DR. R. SCHALLE.

At the conclusion of the present number, we receive the mournful intelligence of the death of our esteemed collaborator, Dr. R. Schalle, of Hamburg.

Repeatedly interrupted in his untiring activity by disease, Dr. Schalle died of gastric hemorrhage, after an illness of but two days, on December 3, 1881, at Warmbrunn.

Amiable in his intercourse, irreproachable in character, imbued with genuine love for his professional brethren, strongly objective in all his scientific publications, a skilled and conscientious physician, the deceased enjoyed the esteem of his colleagues as well as the love of his patients.

In him scientific otology loses an able and thorough contributor. Honor be to his memory, peace to his ashes.